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NASA LANGLEY RESEARCH CENTER AWARDS CONTRACT TO VIRGINIA ASSOCIATED RESEARCH CENTER (VARC) FOR RELEASE: IMMEDIATE

Langley Research Center of the National Aeronautics and Space Administration has awarded a contract to the Virginia Associated Research Center in connection with the establishment on the Peninsula of the NASA Space Radiation Effects Laboratory.

Floyd L. Thompson, Langley Director, announced the award of the contract—which is in an amount not to exceed \$88,000 and is for planning and assistance to NASA in connection with the establishment and operation of the laboratory.

The College of William and Mary, the University of Virginia, and the Virginia Polytechnic Institute make up VARC, which was formed under authority of the Virginia General Assembly. The presidents of the three schools comprise the governing council of VARC.

VARC is expected to manage and operate the research laboratory, which will include a synchro-cyclotron and related research facilities, under contract to NASA. In addition, the three Virginia institutions plan to establish a graduate study program in cooperation with NASA at the site of the laboratory.

NASA will utilize the laboratory in research in which investigations simulating the space environment can be performed and the results applied to increase the reliability and safety of spacecraft and space missions. The synchro-cyclotron will permit the simulation of high-energy electron and proton radiation encountered in trajectories or orbits of proposed NASA space vehicles and their systems.

NASA has made application to the General Services Administration for surplus Government land at Oyster Point as a site for the \$12,382,000 laboratory.

Langley procurement and engineering officials are presently negotiating a contract for architect-engineering services for the laboratory which will house the cyclotron. The cyclotron and other research equipment will be a separate design contract.

The laboratory is scheduled to go into operation within about 28 months.

January 11, 1963

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION HAMPTON, VIRGINIA

NASA LANGLEY RESEARCH CENTER NEGOTIATING FOR AWARD OF TWO AIRCRAFT STUDY CONTRACTS FOR RELEASE:
IMMEDIATE

Langley Research Center of the National Aeronautics and Space Administration today announced the selection of the Boeing Company, Transport Division, Renton, Washington, and the Lockheed-California Company, Burbank, California, with which to negotiate two aircraft study contracts expected to total \$1,000,000.

The studies will complement other programs being carried out by the NASA and the Federal Aviation Agency in a national effort to provide the technology necessary for the development of a supersonic commercial air transport capable of speeds up to 2,000 miles an hour.

Boeing and Lockheed were among five firms submitting proposals for the study of four aircraft configurations which are among several potential approaches being investigated by NASA in its supersonic transport research program. Each of the two companies is expected to receive a \$500,000 contract.

Purpose of the studies is to evaluate four concepts investigated by NASA-- including three at the Langley Research Center, Hampton, Virginia, and one at the Ames Research Center, Moffett Field, California. It is planned that each of the two contractors will make a comprehensive study of all four concepts.

NASA expects the industry studies to provide information on the feasibility and the practicability of these four concepts through engineering investigations encompassing all facets of a commercial design-- including airworthiness requirements, structures, and operating problems.

The two studies are to be conducted in sufficient depth to assure that

an adequate degree of confidence in the gross weight and range-payload characteristics will be obtained and to determine whether continued exploitation of the design approach would be of interest.

The broad evaluation is expected to provide a basis for making configuration comparisons—and will serve as a guide to help define future NASA supersonic transport research programs, which thus far have represented a major effort in advanced aerodynamics.

The two companies will be required to complete their studies nine months after award of the contracts, which will be administered during this period by the Langley Research Center. The study reports will be submitted to the NASA at Langley for evaluation.

Information generated by the studies will be made available to United States industry and Government agencies for use in the development of a safe, reliable, and economically competitive supersonic transport.

January 17, 1963

SPACE STUDIES, AERONAUTICAL RESEARCH REPORTED BY LANGLEY SCIENTISTS TO IAS

FOR RELEASE: P,M, 'S JANUARY 23, 1963

Life in the necessarily cramped quarters of a three-man spacecraft during a seven day lunar mission need not impair the alertness and skill of the crew, according to research results reported by scientists of the NASA Langley Research Center to the 31st Annual Meeting of the Institute of the Aerospace Sciences in New York today.

Realistic seven day tests, employing highly skilled research pilots, found them fully capable of completing precise maneuvers needed for atmosphere entry and landing at the end of the week, according to Donald L. Mallick of the Langley staff. He and his co-author, Harold E. Ream, presented a technical paper on "Crew Performance and Personal Observations on a Lunar Mission Simulation." Both are research pilots who participated in the experiments.

The research study was made in a simulator fitted with an instrument panel and other appropriate equipment on which realistic piloting tasks were presented to the crew. They flew their simulated spacecraft through a lunar landing and a lunar orbit rendezvous after three and one-half days of confinement and, after seven days, through a successful reentry to an Earth landing.

Results of the study will be helpful in future simulation work as well as to the actual manned lunar expedition. For example, it was found that the proper arrangement of the spacecraft instrument panel is very important to enable the man-vehicle combination to function together efficiently. The value of exercise was demonstrated by a physical fitness program which the pilots who made the study followed for two months before the simulated

"flight." During the mission, the pilots exercised in a special area inside their spacecraft and maintained peak physical condition throughout the seven day confined mission. Recorded music, originally provided for the off-duty relaxation area in the spacecraft, was later fed into the earphones of the pilot and navigator and provided a welcome relief from the tedium of hours of coasting flight.

One interesting result of the experiment, which was conducted by NASA under a contract with the Martin Marietta Corporation (Baltimore Division), was the adoption of a 26-hour day for the spacecraft crew. They found that two four-hour sleep periods separated by a nine hour wake period were much more satisfactory than the usual 16 awake, eight asleep pattern.

Another report to the same panel of the Institute of the Aerospace Sciences told of experiments to find out whether pilots are capable of completing a rendezvous in space by visual means. The report, entitled "Visual Capability of Pilots as Applied to Space Rendezvous Operations," was written by Jack E. Pennington and Roy F. Brissenden, aerospace scientists of guidance and control branch of the Aero-Space Mechanics Division at Langley Research Center.

Pennington and Brissenden assert that visual rendezvous will make maximum use of the remarkable capabilities of the human pilot, thereby requiring a minimum of complex automatic equipment and increasing the opportunities for success. They recognize that an efficient rendezvous requires performance in the space environment of visual judgments considerably more precise than those needed in everyday living. But, they hold, a pilot can sight the target vehicle with which he plans to rendezvous, perhaps from as much as 200 miles away, if it is lighted by the sun or carries a bright, flashing beacon. And

then, by estimating its rate of motion, he can successfully brake his own spacecraft along a path that will lead to interception.

When the rendezvous is nearly complete, their research indicates, a pilot's ability to estimate short distances is entirely adequate to complete the last ten or 15 feet of a gentle, final docking maneuver.

Although they recommend further studies, particularly in a real space environment, the authors state: "... it should be kept in mind that man, if not overloaded, can be the most reliable and versatile element in the system. Optical and electronic aids can considerably reduce the workload of the pilot, making it easier for him to discharge his prime responsibility to exercise judgment and control. Devices selected on this basis, that do not subordinate the pilot to the equipment, are suggested."

Dr. John C. Houbolt, Chief of the Theoretical Mechanics Division of Langley Research Center, served as general chairman of the IAS session on Guidance and Control for Orbital and Rendezvous Problems in which both scientific papers were presented.

In an earlier session on Fluid Mechanics, another Langley scientist,

Dr. Leonard Roberts, head of the mathematical physics branch of the Theoretical Mechanics Division, discussed a problem that could cause difficulties for the first men to land on the moon -- the dust cloud that may be raised by the rocket engine of their descending spacecraft.

Although exact knowledge of the surface of the moon is lacking, many scientists think it probably has a dust layer several inches deep. A space-craft landing there will cause erosion and possibly even dust storms, although both effects will differ from those familiar on Earth because the moon is airless. Dr. Roberts' research is an effort to form a general idea

of what may happen, and it will later be changed and enlarged as more is learned about the moon. His methods are mathematical, and are based on the large store of knowledge NASA and others have accumulated about hypersonic (more than five times the speed of sound) gas flows as well as on meteorological studies of dust storms and wind erosion on Earth. His results will be used to guide and help evaluate a series of vacuum chamber experiments now going on.

In general, Dr. Roberts concludes that a spacecraft descending to land on the moon will first erode a crater by the action of its rocket exhaust. If there is dust on the surface, it will be blown outward and away from the descending vehicle. He believes that extensive erosion will not occur unless the vehicle hovers within a few feet of the surface for a minute or more.

Visibility, Dr. Roberts concludes, should not be appreciably reduced because the rocket exhaust striking the lunar surface will be deflected outward and away from the spacecraft and air will not be present to recirculate the dust in an enveloping cloud. He expects that the experimental program now in progress will improve our understanding of the problem and will help importantly to reduce the landing hazards faced by the first United States manned lunar expedition.

Other Langley Research Center scientists presented three additional research reports during the three days of technical meetings. Typical of the varied work of the Center, their reports covered such widely separated areas as instruments for satellites, supersonic aircraft flutter problems, and wind tunnel experiments on helicopter rotors.

William H. Kinard, a scientist in the high temperature materials branch of the Applied Materials and Physics Division, presented one section of a

two part paper on the "Development of Capacitance Type Micrometeoroid Sensors."

Langley scientists have made extensive contributions to the study of the minute particles of solid matter found in space called micrometeoroids. The particles are important because they may present a hazard to spacecraft, and the Explorer XVI satellite, launched from NASA's Wallops Station on December 16, 1962, is currently gathering information about them. Mr. Kinard's paper discussed a type of instrument which can be used in further satellite studies of the problem. The second part of the paper was presented by co-author J. D. Campbell of Space-General Corporation, El Monte, California.

George E. Sweet, an engineer in Langley's VTOL (vertical take-off and landing) branch of the Aero-Space Mechanics Division, described a series of wind tunnel experiments with a 15-foot helicopter rotor turning at higher-than-usual speeds. Helicopters do not ordinarily cruise under conditions in which rotor stall occurs, but it can be encountered during maneuvers, in gusty air, or during high speed flight. In order to develop high-performance helicopters capable of flying in all weather conditions, research on rotor stall is necessary. Results of the experiments will help refine existing rotor theory and should aid designers of improved helicopter types. Julian L. Jenkins, Jr., another engineer of the VTOL branch, was co-author of the paper, entitled "Results of Wind-Tunnel Measurements on a Helicopter Rotor Operating at Extreme Thrust Coefficients and High-Tip-Speed Ratios."

Herbert J. Cunningham, aerospace engineer in the analysis section of the Dynamic Loads Division of Langley Research Center, presented a technical "Analysis of the Flutter of Flat Rectangular Panels on the Basis of Exact Three-Dimensional Linearized Supersonic Potential Flow." Flutter, one of the most complicated branches of the science of aerodynamics, is a structural

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instability which develops under the influence of high speed air flow. The flapping of a flag in a breeze is a very simple, commonly-experienced kind of flutter. For certain flight conditions, a related kind of flutter can occur in the metal structure of an airplane, often with serious consequences.

NASA research for many years has sought new and better understandings of the flutter problem to aid designers of high speed aircraft and space launch vehicles, and the paper presented by Mr. Cunningham concerns the flutter analysis of a single rectangular panel operating at low supersonic speeds. His analysis covers a hitherto unstudied area of research and was accomplished through the use of high speed computing machinery. Because of the complexity of the mathematics used to describe flutter conditions, only the capability of high speed computers made the work possible.

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TWO CONTRACTS TOTALLING \$891,189 AWARDED BY NASA FOR SPACE RADIATION EFFECTS LABORATORY (CYCLOTRON)

FOR RELEASE: IMMEDIATE

Two contracts totalling \$891,189 have been awarded by the National Aeronautics and Space Administration for services required in the establishment by NASA of a Space Radiation Effects Laboratory and synchro-cyclotron near the Langley Research Center.

One contract was to the joint venture partners of Giffels and Rossetti,

Detroit, Michigan, and Marcellus Wright and Son, Richmond, Virginia. The two

firms will provide architect-engineering services for the laboratory. The

contract is for \$209,931.

The second contract was awarded to William M. Brobeck and Associates,

Berkeley, California, for the engineering design of a 600-million electron volt

synchro-cyclotron and associated equipment which will be housed in the Space

Radiation Effects Laboratory. Amount of the contract is \$681,258.

The laboratory and cyclotron, expected to cost approximately \$12,382,000, will be used by NASA in simulating space radiation for research investigations in support of space flight programs. The NASA has applied to the General Service Administration for surplus Government land at Oyster Point as a site for the research facility, scheduled to be completed in mid-1965.

It is planned that the College of William and Mary, the University of Virginia, and the Virginia Polytechnic Institute, serving jointly as the Virginia Associated Research Center will operate the laboratory under contract to the Langley Research Center. VARC also plans to establish a graduate study program in cooperation with NASA at the laboratory site.

February 8, 1963

/ Inc. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION

HAMPTON, VIRGINIA

TIDEWATER SCIENCE CONGRESS MARKS BEGINNING OF NASA AWARDS PROGRAM IN FOUR-STATE AREA

FOR RELEASE: IMMEDIATE

National Aeronautics and Space Administration has presented awards for outstanding achievement in six fields of science to senior high school students who entered exhibits in the 12th annual Tidewater Science Congress held in Norfolk Saturday.

Floyd L. Thompson, NASA Langley Research Center director, in announcing the award winners today, reported that this marks the beginning of an annual NASA awards program to be conducted in conjunction with the Tidewater Science Congress and at regional fairs in four states.

Four members of the NASA research staff at Langley participated as judges in the all-day science fair held Saturday at Norview High School. They included Dr. Samuel Katzoff, chief NASA judge; Wilmer H. Reed III, Gerald D. Walberg, and Howard B. Edwards.

The six categories in which NASA Certificates of Outstanding Achievement were presented are aerodynamics, space vehicles, space flight and propulsion, space life sciences, space physical sciences, and space electronics and communications. These special NASA awards were in addition to the regular Tidewater Science Congress prizes.

The names of the NASA winners, their schools, and exhibits are as follows: Aerodynamics: Robert A. Baals, Warwick High School, wind tunnel and study of low-drag shapes.

Space Vehicles: Rod Fombell and Cecil Jenkins, Great Bridge High School, a robot for exploration of the moon.

Space Flight and Propulsion: Chad Rayfield and Carlton Morgan, Warwick

High School, radio frequency plasma-torch.

Space Life Sciences: Miss Pat Tischler, Maury High School, a study in genetics.

Space Physical Sciences: Don Robinson, Churchland High School, research on the properties of gamma radiation.

Space Electronics and Communications: Edward Volkstorf, Churchland High School, a transistorized digital computer.

As a part of NASA's nationwide participation in regional science fairs affiliated with the National Science Fair-International, Langley will present NASA Outstanding Achievement awards in the six categories in the four-state area of Virginia, West Virginia, North Carolina, and South Carolina. Other NASA centers will take part in regional fairs in their areas.

Thus far this year, Langley has been advised by state and regional fair directors that students in the three senior high school grades will compete for the six NASA awards at fairs at Hopewell and Roanoke, Virginia; Athens, Montgomery, and Salem, West Virginia; Raleigh and Charlotte, North Carolina; and Spartanburg, Orangeburg, Greenville, and Columbia, South Carolina. Langley staff members will serve as judges in the NASA-sponsored competition at most of these fairs, which are preliminary to the 14th National Science Fair-International to be held in May at Albuquerque, New Mexico.

In addition to the state and regional participation, NASA will select two finalists for the six NASA categories at the National Science Fair-International. Each winner on the national level will receive a NASA Certificate of Merit and will be invited to spend a week at an NASA research center, selected on the basis of the interests of the award recipients. Each student will be permitted to select a teacher to make the visit with him.

(March 11, 1963)



NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, SW, WASHINGTON 25, D.C.
TELEPHONES: WORTH 2-4155 — WORTH 3-6925

FOR RELEASE:

WEDNESDAY AM's APRIL 24, 1963

RELEASE NO. 63-81

INDUSTRY ASKED TO PROPOSE MANNED ORBITING RESEARCH LABORATORY PLANS

Requests for aerospace industry proposals for studying manned orbital research laboratory systems capable of sustaining a four-man crew in space for one year have been issued by the National Aeronautics and Space Administration's Langley Research Center, Hampton, Virginia.

The results of the comparative studies of manned orbital research laboratory concept will form another step in NASA research on the most effective ways to permit man to work usefully in space. Extensive research in progress for several years has developed technology applicable to multi-manned orbital spacecraft and has led to continuing interest in the concept.

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There is no NASA approved flight project for an orbital laboratory at the present time.

A laboratory orbiting in space could provide scientists with many opportunities for scientific and engineering research which cannot be performed on earth, with wide flexibility of experimentation and operation. Controlled experiments on the effects of the space environment could be conducted and various techniques to enhance man's tolerance to the weightless or low "G" condition could be explored. The crew members themselves would be subjects of experimental studies on human effectiveness and abilities in space.

Before interplanetary exploring missions can be undertaken, it is necessary to learn much more than we now know about the long term effects of weightlessness or reduced gravity on human crews. Because extended periods of weightlessness cannot adequately be simulated on the surface of the earth, a manned orbital laboratory concept offers a useful way to make such studies.

The manned orbital research laboratory system, capable of year-long missions as envisioned by NASA scientists and

engineers, would provide a way to gather experimental know-ledge, and the requested proposals are intended to survey the engineering and design problems involved. One version of such a system, derived from a study made by NASA scientists and engineers, was outlined in the request for proposals and will be investigated along with alternative systems.

The laboratory concept as outlined provides an orbital workshop for four men with provision for changing crew members
and periodically resupplying the vehicle. At least one crewman could complete a full year's mission to provide a longterm check on weightlessness and its effects.

The NASA concept described in the request for proposals would make maximum use of current programs.

According to NASA's concept, the laboratory would be launched by a Saturn I or I-B into a circular orbit from Cape Canaveral, and after a checkout period, two crew members using the Gemini spacecraft currently being developed, would ascend to the laboratory's orbit and complete a rendezvous and docking maneuver.

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Later, two more crewmen would join the laboratory by the same method to complete the four-man crew. At intervals of 90 days or less, an unmanned resupply spacecraft launched by an Atlas-Agena combination would be orbited and brought by radio control to a rendezvous with the laboratory. One man could enter the laboratory at each crew change, thus providing a check on the cumulative effects of weightlessness on man's total capability.

Two contracts are expected to evolve from the requested proposals.

Phase I will provide a comparative study of several alternative ways to obtain the orbital laboratory which is envisioned. Phase I will also consider the feasibility of providing artificial gravity for the laboratory. Following completion and evaluation of the Phase I comparative studies, NASA may follow with a Phase II preliminary design study. However, Phase II has not been approved by NASA at this time.

Should Phase II be undertaken, a single contractor would be required to synthesize into a mature concept the design study

found most feasible in Phase I and to furnish a preliminary design for a complete orbital laboratory system. Mockups of the laboratory and resupply spacecraft would be provided, including mockup systems and equipment.

It would be expected that the preliminary design could be prepared from the information supplied by the preliminary designer.

The contractor would be required to furnish cost estimates in
detail, evidence of reliability of all systems in the laboratory and resupply vehicles, and a detailed operating plan for
the entire laboratory, space ferry, and resupply system. In
accordance with the recent NASA-Department of Defense agreement
on Gemini, no hardware procurement would be conducted without
the prior agreement of DOD.

Langley Research Center will monitor work under the study contracts. Interested firms are to have their response to the request filed with the Langley Research Center by May 14. Evaluation and contractor selection will follow.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, SW, WASHINGTON 25, D.C.
TELEPHONES: WORTH 2-4155—WORTH 3-6925

FOR RELEASE: IMMEDIATE

Wednesday, June 5, 1963

RELEASE NO: 63-126

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NASA AWARDS LIFE SUPPORT SYSTEM CONTRACT TO GENERAL DYNAMICS CORP.

The National Aeronautics and Space Administration today awarded a \$931,099 contract for designing and fabricating an advanced four-man six-month life support system to the General Dynamics Corporation's Astronautics Division, San Diego, Calif.

Work under the contract, to be directed by the Langley Research Center, Hampton, Va., will support and further the research programs of NASA's Directorate of Biotechnology and Human Research in the Office of Advanced Research and Technology.

The contract award is the outgrowth of a request issued earlier this year to a number of aerospace industry firms asking for proposals on the design and construction of a life support system for space flights of extended time periods. Ten companies filed proposals early in March, and evaluation and contract negotiations followed.

Under the terms of the award, General Dynamics will undertake 18 months of research, design, fabrication and testing, with concurrent participation by scientists and engineers of the Langley Research Center staff.

At the conclusion of the contract, the company will deliver to the Langley Center a fully-operating prototype life support system with all necessary controls and instrumentation.

The system will include atmosphere and thermal controls, water management, hygiene and sanitation and other controls, sensors, displays and instruments to form a completely integrated system. It will be properly enclosed for use in the research program at Langley.

NASA officials pointed out that the life support system used successfully in Project Mercury is designed for relatively short periods of service, and that simple extension to much greater durations would lead to excessively heavy equipment.

Before extended space missions with multiple crews are attempted, the present scope of technology must be enlarged, and the research called for in the new life support contract will contribute to that end.

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NASA SELECTS CONTRACTORS FOR MANNED ORBITING RESEARCH LABORATORY STUDIES

FOR RELEASE: IMMEDIATE

Selection of the Boeing Company, Seattle, Washington, and the Douglas
Aircraft Company, Inc., Santa Monica, California, for final negotiations leading to Manned Orbital Research Laboratory study contracts was announced today
by Floyd L. Thompson, Director of NASA's Langley Research Center, Hampton,
Virginia.

Two definitive three-month study contracts valued at nearly \$400,000 each are expected to be issued by the National Aeronautics and Space Administration later this month.

The two companies were selected from 11 aerospace industry firms who responded to a request for proposals issued by the Langley Research Center in April. After the responses were received at the Center on May 14, an intensive evaluation of technical and management factors was completed by Langley engineering and administrative officials.

Results of the comparative studies of a Manned Orbital Research Laboratory concept will form another step in NASA research on the most effective ways to permit man to work usefully in space. Extensive research in progress for several years has developed technology applicable to multi-manned orbital spacecraft and has led to continuing interest in the concept. There is no NASA-approved flight project for an orbital laboratory at the present time.

A Manned Orbital Research Laboratory System capable of year-long missions as envisioned by NASA scientists and engineers would provide a way to gather needed additional knowledge, and the study contracts now being

negotiated are intended to survey the engineering and design problems involved.

One version of a Manned Orbital Research Laboratory System, outlined by NASA in its request for proposals, will be studied by each company, along with one or more alternative systems.

The laboratory concept outlined by NASA would constitute an orbital work-shop for four men with provision for changing crew members and periodically resupplying the vehicle. At least one crew member could complete a full year's mission to provide a long term check on weightlessness and its effects.

NASA's concept would make maximum use of current programs for the Saturn launch vehicle, the Gemini spacecraft system for crew rotation, the Atlas-Agena for resupply, and the range, tracking and data systems existing or being built.

Langley Research Center will monitor work under the Boeing and Douglas study contracts, under the over-all direction of NASA's Office of Manned Space Flight, Washington, D. C.

June 5, 1963

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CONTRACTORS REPORTING PROGRESS
ON SUPERSONIC TRANSPORT STUDIES

FOR RELEASE: IMMEDIATE

Technical progress reports on supersonic commercial air transport study contracts issued by the National Aeronautics and Space Administration earlier this year to the Boeing Company's Transport Division, Renton, Washington, and the Lockheed-California Company, Burbank, California, were presented this week at the NASA Langley Research Center, Hampton, Virginia.

Under terms of the nine-month contracts signed with the two companies early in February, each group was required to make a progress report at the half-way point of the studies.

Both companies are engaged in detailed studies of four promising concepts for supersonic commercial transport aircraft which have been extensively investigated by NASA. Three of the concepts evolved from wind tunnel and other studies at the Langley Research Center. The fourth concept was investigated at the NASA Ames Research Center, Moffett Field, California.

The NASA panel convened to receive and evaluate the interim progress reports includes engineering, scientific and management representatives of Langley Research Center, Ames Research Center, Lewis Research Center and Flight Research Center.

During sessions when each contractor presented a summary of the work accomplished, the panel was joined by officials from NASA's Office of Advanced Research and Technology, through which the agency's supersonic transport research program is managed. A representative of the Presidential Office of Science and Technology, a representative of the Department of

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Defense, and personnel of the Federal Aviation Agency, with which NASA is working on the nation's supersonic transport program, participated in the summary sessions.

NASA expects the industry studies to provide information on the feasibility and practicability of the four concepts through engineering investigations encompassing all facets of commercial design — including airworthiness requirements, structures, and operating problems.

The broad evaluations are expected to provide a basis for making configuration comparisons, and will assist in guiding the supersonic transport development program just announced by the President.

Each contractor will make a final report on the studies in November.

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June 7, 1963

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NASA LANGLEY RESEARCH CENTER DIRECTOR REGEIVES HONORS FROM TWO UNIVERSITIES

Floyd L. Thompson, Director of the Langley Research Center of the National Aeronautics and Space Administration and a Federal civilian scientist and administrator for 37 years, has been awarded honorary doctor's degrees by two universities.

Thompson's alma mater, the University of Michigan, presented him the honorary degree of Doctor of Science at commencement exercises at Ann Arbor, Michigan, June 8. This was the second award given to Thompson by the University of Michigan, which cited him in 1953 as a distinguished alumnus-- in recognition of his outstanding career in the flight sciences.

The College of William and Mary awarded Thompson the honorary degree of Doctor of Science at the school's commencement conducted at Williamsburg, Virginia, June 9.

Thompson recently received the NASA Medal for Outstanding Leadership. He was cited "for his outstanding leadership of the scientists and engineers who were responsible for the original technical concepts and who comprised the nucleus of the development team for the space flight missions of the United States in Project Mercury," Presentation of the award was made by the President of the United States at ceremonies at the White House May 21.

Thompson was born in Salem, Michigan, November 25, 1898. After four years of Navy service in World War I, he entered the University of Michigan and received a B.S. Degree in Aeronautical Engineering in 1926.

Beginning his science career July 8, 1926, as a member of the staff of the Langley Research Center, he served as Assistant Chief of Research, Chief of Research, and Associate Director before becoming Director May 23, 1960.

Thompson is a Fellow of the American Institute of Aeronautics and Astronautics, and is a member of the American Association for the Advancement of Science.

Active in civic affairs on the Virginia Peninsula, he is a member of the Rotary Club, the Board of Trustees of Dixie Hospital, and an honorary member of the Chamber of Commerce.

He lives at 94 Alleghany Road, Hampton, with his wife-- the former Jean Geggie of Hampton. They have three daughters.

June 10, 1963



NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, SW, WASHINGTON 25, D.C.
TELEPHONES: WORTH 2-4155—WORTH 3-6925

FOR RELEASE:

IMMEDIATE

Monday, June 17, 1963

RELEASE NO: 63-137

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PLASMA ACCELERATOR INVENTION EARNS INCENTIVE AWARD

Two NASA scientists, Dr. Carlheinz Thom and Joseph Norwood, Jr. have received NASA awards of \$150 each for invention of a plasma accelerator. The accelerator, capable of controlled ignition under very low gas pressures, was invented while Norwood and Dr. Thom were conducting research at the Langley Research Center, Hampton, Va.

Dr. Thom, who has since transferred to the NASA
Headquarters, received his award from Dr. Raymond L.
Bisplinghoff, Director of the Office of Advanced Research
and Technology. Dr. Thom, now a scientist in the physics
of the fluids program, reports to Dr. Hermann H. Kurzweg,

Director of Research in OART. Norwood, a research scientist in the magnetohydrodynamics section of the Langley aerophysics division received his award from Floyd L. Thompson, Director of the Langley Center.

The plasma accelerator is a magnetically triggered, electromagnetic device consisting essentially of electrodes, a high-voltage source, a circuit for creating a magnetic field and a conduit to carry the working fluid between the electrodes. The invention has been used in the programs of research in plasmaphysics, and has possible use as a component of propulsion systems in space.

Dr. Thom was engaged in plasmaphysics at Langley from May 1958 to September 1962 when he transferred to the Headquarters office. Before joining NASA he spent two years at the Harvard Business School as a Eruopean Productivity Agency Scholar.

He is a native of Bad Godesberg, West Germany. He received his education at the Universities of Berlin, Gottingen and Bonn, graduating with Ph.D. degree in physics in 1949. Dr. Thom was technical editor of a publishing firm in Germany before coming to this country. He lives with his wife and son in Washington, D.C.

Norwood has been on the Langley staff since June 1958, following his graduation from the University of North Carolina. He was born in Baltimore, in 1935. He and his wife have two daughters. They make their home in Williamsburg, Va. Norwood is now working toward a masters degree at the College of William and Mary.



FOUR LANGLEY RESEARCH CENTER SCIENTISTS REPORT HELICOPTER, V/STOL STUDY RESULTS

FOR RELEASE: IMMEDIATE

Hampton, Va. -- Four scientists of the National Aeronautics and Space Administration's Langley Research Center will present results of recent aerodynamic research on helicopters and V/STOL aircraft at a technical symposium in Buffalo, N. Y., this week.

Wilmer H. Reed III and Robert M. Bennett, both of the Aeroelasticity

Branch of the Dynamic Loads Division, will present a paper on "Propeller

Whirl Considerations for V/STOL Aircraft."

James Scheiman and Henry L. Kelley, scientists of the VTOL Branch of the Aero-Space Mechanics Division, will present a "Comparison of Flight Measured Helicopter Rotor Blade Chordwise Pressure Distributions and Two-Dimensional Airfoil Characteristics."

Their reports will be presented at a Symposium on Dynamic Loads Problems Associated with Helicopters and V/STOL Aircraft sponsored jointly by the Cornell Aeronautical Laboratory, Inc., of Cornell University, and the U. S. Army Transportation Research Command (TRECOM), Fort Eustis, Virginia. The symposium will be held on June 26 and 27.

Robert W. Boswinkle, Chief of the Aeroelasticity Branch of Langley's Dynamic Loads Division, will serve as chairman of one of the technical sessions of the symposium.

The paper by Scheiman and Kelley on helicopter rotor blade pressure measurements made at the Langley Research Center points out that actual helicopter rotors do not always perform aerodynamically as predicted on the

basis of two-dimensional airfoil data obtained through wind tunnel studies and related calculations.

The authors suggest that before comparisons of actual and predicted air loads are used to determine the validity of angle-of-attack calculations, each experimental case must be reviewed for evidence of the presence or absence of discrepancies between the actual section aerodynamic characteristics as reflected by chordwise pressure distribution, and the section characteristics being assumed in the analysis.

Reed and Bennett discuss the phenomenon known as propeller whirl flutter as it applies to V/STOL (vertical/short take-off and landing) aircraft.

Propeller whirl flutter is a precession-type instability which can develop in a flexibly-mounted aircraft propeller-power-plant system.

Although the basis for understanding propeller whirl flutter as it applies to fixed-wing aircraft is now well established, the NASA scientists point out that the sometimes radical departures from conventional methods of installing propeller-powerplant systems -- particularly on V/STOL configurations -- have made propeller whirl stability an important design consideration for new propeller aircraft.

The authors establish that calculated whir1-flutter boundaries based on theoretical propeller derivatives agree reasonably with experimental results and that those based on measured derivatives are in excellent agreement with experiment.

After evaluating flight conditions which represent the transition maneuver in which a V/STOL machine changes from hovering to forward flight, or vice versa, the Langley Research Center scientists conclude that the effects of large angle of attack and large thrust coefficient are relatively unimportant from the standpoint of propeller whirl stability.

They state that the hinged or flapping propeller blades employed in some existing and projected V/STOL designs can have significant stabilizing or destabilizing influences on propeller whirl, and they suggest additional research to obtain a better understanding of the problem.

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June 26, 1963

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SPACE MECHANICS DIVISION FORMED AT NASA LANGLEY RESEARCH CENTER

FOR RELEASE: IMMEDIATE

Hampton, Va. -- A Space Mechanics Division has been established at the Langley Research Center of the National Aeronautics and Space Administration to conduct scientific investigations in guidance and control through use of simulators, and to carry out other research activities important to the success of future space flight missions.

The new research organization, which was formed with personnel from other Langley divisions, is headed by William H. Phillips of Hampton, 45-year-old native of Port Sunlight, England, who has been an outstanding contributor in the field of flight guidance and control since he joined the Langley staff in July 1940. He received a B.S. degree in Aeronautical Engineering in 1939 and an M.S. degree in 1940 from Massachusetts Institute of Technology. He won the 1944 Lawrence Sperry Award for outstanding accomplishments in the field of stability and control of aircraft.

Ralph W. Stone Jr. of Newport News and James B. Whitten of Hampton have been appointed assistant chiefs of the new division, which will utilize the Space Vehicle Rendezvous Docking Simulator, the Lunar Landing Research Facility, and other space simulators in research in support of the lunar mission and other space flight programs.

The Aero-Space Mechanics Division at Langley has been renamed the Flight Mechanics and Technology Division. Philip Donely of Hampton continues as chief of the renamed division. John P. Campbell of Newport News, former assistant chief, has been named associate chief. John P. Reeder of Newport News retains his former position of head of the operations branch of the division and will also serve as assistant chief.

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(July 9, 1963)



FLIGHT REENTRY EXPERIMENT WILL TEST ABLATION MATERIAL

FOR RELEASE: IMMEDIATE

A flight experiment to find out how well a heat shield material known as a charring ablator performs during an actual reentry at 18,600 miles per hour will be launched no earlier than July 18 by the National Aeronautics and Space Administration from NASA's Wallops Station, Wallops Island, Virginia. The heat shield experiment, devised by scientists of the NASA Langley Research Center, will be flown on a Scout launch vehicle.

While laboratory tests have furnished some information on the performance of heat shield materials, the forthcoming experiment will be the first flight test of an ablation material at super-orbital reentry speeds in a high energy environment not fully attainable by ground simulation.

The experiment will be flown on a trajectory which will expose the heat shield material to some of the altitude and speed conditions expected to occur during reentry from a lunar mission.

The flight experiment is one of five using Scout vehicles in the NASA Supercircular Reentry Research Project. The project is part of the reentry research program of NASA's Office of Advanced Research & Technology (OART).

The Scout flight will attempt a reentry speed well above those attained during orbital reentries, and future experiments at even higher speeds are being planned. A separate research project -- Project Fire -- will provide information for shielding spacecraft against the heat generated at reentry speeds of 25,000 miles per hour or more.

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To determine how well the heat shield material performs during the flight, the nose cone of the reentry payload has been fitted with more than two dozen temperature measuring devices known as thermocouples.

Temperatures recorded during flight will be relayed to the experimenters by two telemetry transmitters, one operating through a tape recording delay system to ensure that no information gathered during the so-called reentry communications "blackout" will be lost.

Ablation is a complicated physical and chemical reaction in which some heat shield material is lost during reentry. The term "charring ablator" identifies a class of plastic materials, some with added substances such as fiberglas, which appear useful as heat shields.

They have worked well in reentries from Earth satellite speeds near 17,000 miles per hour, and research is now seeking improved ablation materials to withstand the greater heats to be expected on reentries from lunar missions at 25,000 miles per hour.

Charring ablator heat shields protect a spacecraft in several ways.

At first, they begin to decompose chemically, absorbing some heat in the process. During decomposition, gases are evolved which act as an insulating blanket as they pass over the heat shield surface.

Finally, at the surface, a charred layer of coke-like material develops, capable of operating at very high temperatures to radiate heat away from the spacecraft. The uncharred lower layers provide an insulating effect during the process.

Total Scout payload weight to be flown will be about 375 pounds; the reentry payload weight at the start of reentry is about 170 pounds.

Including the adapter linking it to the Scout's fourth stage, the payload is just over four feet long. It tapers from slightly less than 12 inches at the blunt heat shield end to $20\frac{1}{4}$ inches at its widest path.

After launch from Wallops Island, the first three Scout stages propel the remaining sections to an altitude of about 115 miles. Near the peak of the trajectory, the Scout control system tilts the vehicle slightly down-ward and the remaining stages fire in quick succession. Trajectory and speed conditions are carefully selected to subject the ablation heat shield to the energy environment required for proper evaluation of the material's performance.

Reentry will occur nearly 1,000 miles downrange from Wallops Island. The payload and burned out fifth stage will drop into the Atlantic Ocean several hundred miles northeast of Antigua about 12 minutes after launch. The flight will take place during maximum darkness and a meteor-like trail will be visible during the entry phase. Top speed is expected to occur at 70 miles altitude.

TRACKING AND TELEMETRY

Radar, telemetry and optical means will all be used to gather scientific information on the heat shield material experiment. Radar tracking stations at Wallops Island, Bermuda, and aboard an Atlantic Missile Range ship located in the reentry area will follow the course of the flight.

Photographs and spectrographs of the payload entry will be made by cameras carried in an aircraft flying in the reentry area.

Telemetered data broadcast from the payload and the launch vehicle will be received at Wallops Island, Bermuda, and Antigua, as well as by two telemetry aircraft and the Atlantic Missile Range ship located in the reentry area.

About seven minutes after launch, the payload experiment will enter a region where ionization in the atmosphere surrounding the reentry package will block off telemetry signals. The radio "blackout" may last as long as 80 seconds and a special on-board recorder with delayed playback is provided to assure that no flight data are lost. There will be no attempt to recover the payload.

Cameras to photograph the reentry use extremely sensitive film. The flight, therefore, will be made at a time when there is the least possible light and no cloud cover. Possible launch times have been selected to avoid twilight and moonlight hours.

Because accurate information on atmospheric conditions is needed to evaluate the results of the experiment, a series of at least 10 ARCAS sounding rockets will be launched from Wallops Island, Cape Canaveral, Bermuda and Antigua and a Wallops Station telemetry ship before and after the Scout flight. Air temperatures and densitiesswill be measured by the sounding rockets.

LAUNCH VEHICLE

The basic Scout launch vehicle is a multi-stage, guided booster using four solid propellant rocket motors capable of carrying payloads of varying sizes on orbital, space probe or reentry missions. Developed by

the Langley Research Center, the Scout is currently the only operational solid propellant launch vehicle with orbital experience.

The four Scout motors, Algol, Castor, Antares, and Altair, are interlocked with transition sections that contain the guidance, control ignition,
instrumentation systems, separation mechanisms, and the spin motors needed
to orient the fourth stage. Guidance is provided by an autopilot and control achieved by a combination of aerodynamic surfaces, jet vanes, and
hydrogen peroxide jets. Scout is approximately 72 feet long and weights
approximately 40,000 pounds at lift off.

To attain the velocites required for the present experiment, a fifth stage 17-inch spherical rocket motor forms the core of the payload section, and remains with the instrumented payload during the reentry.

The Scout is capable of placing a 240 pound payload into a 300 mile orbit or carrying a 100 pound scientific package approximately 7,000 miles away from earth. Launching sites are now operational on both coasts of the United States for either polar or east-west orbital launches. Because of its relative economy, reliability and flexibility, the Scout is employed extensively for small space research payloads by the NASA, Department of Defense, Atomic Energy Commission, and for international programs. Langley Research Center continues to furnish Scout project management services.

PROJECT PARTICIPANTS

Langley Research Center has complete management responsibility for NASA's Supercircular Reentry Research Project of which the present heat shield

material experiment is a part. Project Manager is Joseph M. Hallissy.

U. M. Lovelace is Associate Project Manager. For the heat shield material experiment, the payload mamager is W. A. Brooks. M. L. Williams is systems engineer and C. E. Feller is instrumentation engineer.

Eugene D. Schult is Head of the Scout Project Office which developed and now operates the Scout launch vehicle. Scout Field Director is James Hall and Launch Director is Douglas Church. Allen B. Churgin is Payload Coordinatory

Robert Duffy represents Wallops Station as Test Director.

The Supercircular Reentry Research Project, for which Ballard E. Quass is Project Officer, is a part of the program of OART's Office of Space Vehicle Programs, Milton B. Ames, Jr., Director.

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July 16, 1963

CONTRACT LET BY LANGLEY RESEARCH CENTER FOR PART OF DOUBLE SATELLITE EXPERIMENT

FOR RELEASE: IMMEDIATE

Hampton, Va. - The National Aeronautics and Space Administration has begun preparations for the launch of two Explorer series satellites on a single Scout launch vehicle late this year.

NASA's Langley Research Center, Hampton, Va., has awarded a \$478,922 contract to the State University of Iowa at Iowa City to provide one of the space-craft.

The contract covers construction and assembly of one of SUI's series of

Injun satellites containing instruments to record corpuscular radiation streaming into the earth's upper atmosphere from space.

The second spacecraft will be a 12-foot polka dot inflatable sphere to measure air density. The sphere, similar to Explorer IX now in orbit, will be built by the Langley Research Center.

Both the sphere and the Injun are scheduled to be launched into a near-polar orbit by a solid propellant Scout vehicle from the Pacific Missile Range late in 1963.

The launch will mark two firsts:

--It will be the first attempt to measure air densities by a polar orbiting satellite.

--It will be the first attempt to use Scout to place two satellites into orbit at the same time.

The two-part experiment is intended to provide new scientific knowledge of how the Earth's atmosphere reacts to radiation from space.

It is thought such radiation tends to heat the upper atmosphere, thereby changing its density and probably causing it to extend further upward from the Earth.

While the Injun Explorer is measuring the downflow of corpuscular radiation into the atmosphere, the measurements of the Air Density Explorers' orbit will simultaneously indicate drag characteristics in the atmosphere.

After correlating the two sets of data, scientists hope to gain a better understanding of how radiation affects the Earth's blanket of air.

A near-polar orbit was chosen to expose both spacecraft to areas of maximum radiation flux. The Earth's magnetic field deflects particle radiation in a way that allows it to penetrate more deeply in the polar regions.

Both satellite experiments and the Scout are projects of NASA's Office of Space Sciences, with project management a responsibility of the Langley Research Center.

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August 6, 1963



LANGLEY SCIENTIST TO PARTICIPATE IN INTERNATIONAL MEETING IN USSR

FOR RELEASE: IMMEDIATE

Dr. Adolf Busemann, Research Staff Scientist of the NASA Langley Research Center, will represent the Center and the National Aeronautics and Space Administration at an important scientific symposium to be held between September 17 and 23 in Tbilisi, USSR.

The symposium, sponsored by the International Union of Theoretical and Applied Mechanics, is concerned with Applications of the Theory of Functions in Continuum Mechanics, a branch of higher mathematics.

IUTAM, the sponsoring organization, is an international scientific group whose meetings bring together outstanding scientists from many different countries. The late Dr. Theodor von Karman participated in the founding of IUTAM.

During the Tbilisi symposium, Dr. Busemann will present a paper on "Lift Control in Magnetohydrodynamics," a subject on which he has been conducting specialized and advanced research during the past several years. Magnetohydrodynamics is a branch of physics concerned with the motion of electrically conducting gases (plasmas) in the presence of magnetic fields.

As a Member of the International Academy of Astronautics, Dr. Busemann plans to attend the Second Regular Meeting of the Academy in Paris following the IUTAM sessions.

The International Academy of Astronautics meeting is scheduled for September 28.

Upon his return to the United States, Dr. Busemann will begin a year of sabbatical leave from the Langley Research Center, during which he will serve

as a Visiting Professor of Aerodynamics at the University of Colorado, Boulder, Colorado. He will teach a course in compressible flow.

Dr. Busemann was born in Luebeck, Germany, on April 20, 1901, and has been since April, 1947, a member of the staff of Langley Research Center of the National Aeronautics and Space Administration.

He attended high school in Luebeck and completed his undergraduate and graduate work at the Technical College at Braunschweig, Germany, graduating as an engineer in 1924 and receiving his doctorate in engineering in 1925. He started his career as an engineer at the Kaiser Wilhelm Institute (now the Max Planck Institute) in Goettingen, Germany, and later became its chief engineer. While conducting research for six years, Dr. Busemann concurrently studied for his venia legendi under Dr. L. Prandtl, whose renown as a scientist and wind tunnel designer led to the construction for his research activities, during that period, of the Kaiser Wilhelm Institute for Fluid Mechanics, in addition to the wind tunnels at his disposal.

In April, 1931, Dr. Busemann began a four-year period as a lecturer on the subjects of heat transfer, hydrodynamics, and aerodynamics in the Engine Laboratory of the Technical College at Dresden, Germany, under Professor Dr. Richard Mollier. Returning to Braunschweig in 1935 and until the Allied occupation ten years later, Dr. Busemann served as chief of the Gas Dynamics Division of the Aeronautical Research Laboratory and of its rocket test facility near Fassberg.

Following a period as a research consultant in England during 1946 and 1947, Dr. Busemann accepted an invitation in 1947 from the United States

Government to come to this country and continue his career as a research scientist. At Langley Research Center, Dr. Busemann conducts original research

in magnetohydrodynamics and aerodynamics, and acts as a consultant on gas dynamics problems and related subjects. Dr. Busemann has written more than 100 technical papers which have been published.

He was one of two German scientists invited to deliver technical papers at the Volta Congress on high-speed aerodynamics held in Rome, Italy, in 1935. His paper was the first to propose the use of swept wings in the design of high-speed aircraft. He was elected a foreign member of both the Max Planck Association for the Advancement of Science, Germany, and the Academy of Science in Turin, Italy. He received the Carl Bosch Award for Advancement in Aeronautical Science in 1944.

A resident of 18 East Southampton Ave., Hampton, Va., Dr. Busemann became a naturalized citizen of the United States in ceremonies conducted in Norfolk, Va., on November 11, 1954. Members of his family, all of whom are now American citizens, include his wife, Mrs. Magda Krage Busemann, and three married daughters.

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August 26, 1963

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NASA ASKS INDUSTRY PROPOSALS FOR LUNAR ORBITER PHOTOGRAPHIC PROJECT FOR RELEASE:
IMMEDIATE

A project to send a series of five instrumented spacecraft on close-range lunar photographic missions by 1966 was announced today by the National Aeronautics and Space Administration.

The prime project objective is to secure topographic data regarding the lunar surface. These are necessary for the selection and confirmation of landing sites for Apollo manned lunar landing missions and will greatly extend our scientific understanding of the Moon. The lunar orbiter will team with a Ranger hard lunar landing spacecraft and the Surveyor soft-lander in the effort to blaze the way for the Apollo manned lunar landing mission.

Requests for proposals from aerospace firms capable of prime contractor mission management were issued by NASA's Langley Research Center, Hampton, Va.

The lunar orbiter photographic project will be under the over-all direction of NASA's Office of Space Sciences with project management the responsibility of the Langley Research Center.

Atlas-Agena launch vehicles, capable of placing slightly more than 800 pounds into lunar orbit, will be launched from Cape Canaveral, Florida, with the photo-reconnaissance spacecraft.

The proposal request asks for design of a spacecraft capable of obtaining its pictures from an altitude of not closer than 22 miles above the surface of the Moon. From that range, a camera system capable of making high resolution photographs of the lunar surface will gather the information required. At somewhat higher altitudes, the system will make medium resolution pictures.

These pictures can be concentrated in selected areas or may be distributed to sample many separate lunar regions.

According to present plans, medium resolution photographs are needed to make an initial screening of the lunar surface to avoid landing Surveyor soft-landers in areas clearly unsuitable for landing the Apollo lunar excursion module. A segment of the lunar surface about 15,000 square miles in extent is to be covered by the medium resolution pictures.

High resolution pictures will be taken over potential LEM landing areas where Surveyors have been landed to make detailed topographic and surface material studies. As a design target, NASA is asking for a high resolution camera capable of detecting lunar features about the size of a small sports car. It will be required to identify nearly flat areas 25 feet square -- the area needed for a LEM landing.

The request for proposals states that the pictures acquired by the orbiting spacecraft will be transmitted by a telemetry system for reconstruction by receiving stations on Earth. Tracking and data gathering for the project will be accomplished by the NASA Deep Space Network (DSN) and the Space Flight Operations Facility (SFOF) both operated by the Jet Propulsion Laboratory, Pasadena, California.

Tracking data from the orbiter over a period of time will provide information on the shape of the Moon and its mass distribution.

In addition to the five flight spacecraft called for by the requested proposals, the contractor selected will be asked to provide at least three additional spacecraft for test prior to flight.

Industrial firms interested in bidding on the project have until October 4 to file detailed proposals with the Langley Research Center. A NASA Source Evaluation Board will evaluate the proposals from a technical and business management point of view.

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August 30, 1963

July B

FIVE LANGLEY SCIENTISTS PARTICIPATING IN SPACE RENDEZVOUS, RECOVERY SYMPOSIUM

FOR RELEASE: IMMEDIATE

Hampton, Virginia -- Five scientists of the NASA's Langley Research Center are participating this week in a technical Symposium of Space Rendezvous, Rescue and Recovery being held between September 10 and 12 at Edwards Air Force Base, California. The three day meeting is sponsored jointly by the American Astronautical Society and the Air Force Flight Test Center.

In a session on September 10, H. Neale Kelly, a member of the Aeroelasticity
Branch of the Dynamic Loads Division, and James F. McNulty of the Spacecraft
Structures Section of the Flight Vehicles and Systems Division, presented a
report on "Inflatable Parawing Studies Using a Dynamically and Elastically
Scaled Model."

Francis M. Rogallo, Head of the 7- by 10-foot Tunnels Branch of Langley's Full-Scale Research Division, was the featured luncheon speaker on the same date. His address was entitled "Parawings for Astronautics."

On September 11, a scientific study on "Orbital Rendezvous Considerations for a Mars Mission" is to be presented by John D. Bird, Head of the Astromechanics Branch of the Space Mechanics Division, and David F. Thomas, a scientist in the Rendezvous Analysis Branch of the same division.

Kelly and McNulty described successful techniques for wind tunnel testing of scale models of full sized paraglider landing systems for manned spacecraft, while a companion paper presented by Bruce Raff of Goodyear Aerospace Corporation reported on the wind tunnel models his company fabricated.

The test program was designed to assure the efficient, safe performance

of paraglider systems before they are used as gliding controls for manned spacecraft.

The Goodyear Aerospace Corporation engineer told of his company's successful efforts to scale fabric materials to represent the dynamic and elastic properties of a full sized inflatable parawing suitable for the recovery of a large manned spacecraft. From a design of a large inflatable parawing, GAC engineers designed and fabricated a 1/8th size inflatable model which reduced the parawing's length from 40 feet to 5 feet while retaining the necessary simulation of the parawing's elastic and dynamic properties. In addition, a spacecraft capsule was also scaled down and instrumented to measure capsule response and loads during various flight conditions.

Kelly and McNulty, Langley Research Center, Hampton, Va., reported on the wind tunnel test program and steps followed to obtain a method for deploying the parawing from a packaged condition to inflated, gliding flight. Precise measurements taken continuously during deployment showed that the dynamic loads during the critical transient condition were within engineering design capability. In conclusion, it was shown that, as is standard procedure in aircraft development, scaled parawing models in combination with systematic wind tunnel tests form a powerful and economical tool for developing safe and efficient parawing recovery systems.

James F. McNulty has specialized in structural analyses since his graduation from Union College (B.S. in C.E.) in 1944. After serving for a short period as a Junior Stress Analyst for The Glenn L. Martin Company, he became associated with the Langley Research Center as a structural engineer. He received the degree of Master of Applied Mechanics from the University of Virginia in 1954.

As project engineer, he has been responsible for the design and construction management of several research facilities for the National Advisory

Committee for Aeronautics. After NACA became NASA, he was a project engineer on the construction of the Mercury tracking station network. In addition to technical responsibility for the Bermuda and Grand Canary Stations, McNulty represented NASA in negotiations with representatives of the governments of Great Britain and Spain.

For the past two years, McNulty has been specializing in the design of inflatables with special emphasis on paragliders. In addition to general research in this field, he has served on paraglider advisory committees to Manned Spacecraft Center and Marshall Space Flight Center, and was the designer of the Micrometeorite Paraglider intended by NASA to be used as a probe of space hazards.

McNulty is a member of the American Society of Civil Engineers and the National Society of Professional Engineers. He is the author of several technical papers on structural design procedures.

H. Neale Kelly received his bachelor's degree in mechanical engineering with an aeronautical option from North Carolina State College and has done advanced work at the University of Virginia.

Employed by the National Advisory Committee for Aeronautics (predecessor of the National Aeronautics and Space Administration), Kelly worked first in the field of low-speed aerodynamics. In this capacity, he contributed to the general knowledge of the performance, stability and control of sweptback wings, and served as assistant project engineer and project engineer, respectively, on extensive investigations of the low-speed characteristics of the RF-84-F and F-105 airplanes.

Subsequently, Kelly has been engaged in research on flutter and related dynamic-aeroelastic problems. In addition to general work in this field, he has conducted transonic flutter investigations on such specific airplanes and the F-104, P6M, F8U3, and X-15. More recently Kelly was a member of a team of engineers investigating the problem of propeller whirl flutter instability for large turboprop airplanes.

Author of numerous papers on flutter and related dynamic-aeroelastic problems and low-speed aerodynamics, Kelly is presently engaged in research on the problems of deployment of devices for the recovery of spacecraft and launch vehicles.

In his luncheon address, Rogallo described the historical development of the parawing of which he and Mrs. Rogallo are co-inventors. He outlined several proposed astronautical applications of the parawing concept, such as recovery of spacecraft and boosters in the atmospheres of Earth and other planets. He suggested a parawing application might have usefulness for the transportation of men and supplies in space operations on Mars and other planets including Earth.

Rogallo, who lives in Newport News, has been a member of the science staff of the Langley Research Center, National Aeronautics and Space Administration, since 1936. He is head of the 7- by 10-foot Tunnels Branch of Langley's Full-Scale Research Division. He formerly headed Langley's Atmospheric Wind-Tunnel Section and the Stability Tunnel Section.

Rogallo is a native of Sanger, California. He was graduated from Stanford University in 1932. He remained at Stanford until 1935, when he received the degree of Engineer in Mechanical Engineering, Aeronautics.

Rogallo has written a number of publications, mostly on stability, control,

high lift, internal flow and flexible wings. He has been a member of the Institute of the Aerospace Sciences since 1935. He is a member of Phi Beta Kappa, Tau Beta Pi, and Sigma Xi, honorary societies.

The analytical study of "Orbital Rendezvous Considerations for a Mars Mission" to be presented by Bird and Thomas suggests that the orbital rendezvous plan adopted by the United States for Project Apollo can be applied to a manned Mars exploration trip as well.

Their analysis assumes a hypothetical manned trip to explore the planet Mars during 1975. They chose 50 days as the time the expedition would wish to remain on Mars.

From those considerations, they analyzed the relative positions of Mars and the Earth, and concluded that the orbital rendezvous technique could be used.

One problem of importance concerns the fact that Mars is not a perfect sphere but exhibits some oblateness or bulging. The bulge affects the orbit of the command module which would continue circling the planet while the exploring party descended to the surface by a smaller landing vehicle.

The two Langley scientists point out that careful planning and exact calculations would be required to make certain the command module is correctly aligned for efficient launch into an Earth return trajectory. They suggest that an orbit with a maximum altitude of 2,200 miles above the Martian surface and inclined 70 degrees to the planet's equator would provide the correct conditions.

Bird, Head of the Astromechanics Branch, Space Mechanics Division, NASA Langley Research Center, received Bachelor of Science degrees in mechanical engineering and aeronautical engineering in 1941 and 1942, respectively, from the Georgia Institute of Technology. He earned his Master of Science degree in aeronautical engineering from the University of Virginia in 1957 through the Langley

graduate study program. Bird, who joined the Langley staff on June 1, 1942, is an authority on the dynamics of airflow patterns about mutually interacting bodies and airfoil surfaces, with an exceptional understanding of both the theoretical and physical aspects of such interference flows. During the past years he has established a reputation as an expert in the highly specialized and complex area of space flight mechanics including the fields of reentry dynamics, rendezvous, and the manual control of docking operations. He has written definitive papers on the dynamics of spinning missiles and reentry bodies, the mechanics of rendezvous, and the lunar orbit rendezvous concept which has been adopted as the primary mode of early lunar exploration. He conceived and developed a tuft grid to study flow fields by visual methods which has been used throughout the nation. He serves as Langley's technical consultant to Marshall Space Flight Center and industry on orbital assembly techniques, launching, and space flight. Bird is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is 42 years of age, is married and has 3 children, and lives at 321 Harris Creek Road in Hampton, Virginia.

David F. Thomas, 40, has been associated with NASA Langley Research Center since his graduation from the University of West Virginia in 1950, where he received a Bachelor of Science degree in Aeronautical Engineering. He was originally connected with the NACA Stability Wind Tunnel Section and was author or co-author of a number of papers on the low-speed stability of general aircraft configurations. In recent years, as a member of the Rendezvous Analysis Section of the Space Mechanics Division, he has applied himself to studies pertinent to orbital rendezvous and has achieved standing as an authority in the field of rendezvous and the associated trajectory analyses. He has been author or co-author of a number of papers dealing with the use of the adjacency

concept for direct orbital rendezvous. Thomas has made significant contributions in the exploration of the weight saving advantages of lunar orbital rendezvous and its application to the use of available boosters. More recently he has devoted his efforts to the study of rendezvous as applied to interplanetary missions. He is a member of the AIAA. Mr. and Mrs. Thomas and their daughter live at 1 Rhonda Circle, Hampton, Virginia.

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September 10, 1963



NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION 400 MARYLAND AVENUE, SW, WASHINGTON 25, D.C. WORTH 2-4155----WORTH 3-6925 TELEPHONES:

FOR RELEASE: PM's Thursday

September 19, 1963

RELEASE NO. 63-210

NASA CONFERENCE RECEIVES REPORTS ON SUPERSONIC TRANSPORT STUDIES

HAMPTON. Va.--Feasibility studies nearing completion for NASA by two major airframe companies confirm that a solid foundation of research and advanced industrial technology exists on which the United States program to develop and build a supersonic airliner can be based.

The studies began in January after eight years of experiment and analysis by several NASA research centers had evolved four aerodynamic concepts which appeared promising as supersonic commercial transports. Contracts for the studies were awarded by the NASA Langley Research Center, Hampton, Va., to the Boeing Company, Airplane Division, Renton, Wash., and the Lockheed-California Company, Burbank, Calif.

Contractor reports made during a three-day technical session at the Langley Research Center, Sept. 17-19, indicate that two of the four airplane concepts studied--configurations known as SCAT-16 and SCAT-17--appear to be the most promising from a commercial standpoint. (SCAT stands for Supersonic Commercial Air Transport.)

SCAT-16 is an airplane concept evolved by scientists and engineers of the Langley Research Center. It uses the principle of variable wing sweep to provide good flying characteristics at the low speeds needed for landing and take-off as well as for efficient supersonic cruise.

SCAT-17 grew out of research conducted at the NASA Ames Research Center, Mountain View, Calif. Its distinguishing features are: a long fuse-lage with a fixed delta (triangular) wing mounted well aft and canard control surfaces well forward of the wing.

Design guidelines provided by NASA to Boeing and Lockheed called for evaluation of the four concepts with respect to an aircraft which could:

- (a) Fly at Mach 3.0--about 2,000 miles per hour;
- (b) Carry a payload of 26,125 pounds--equivalent to 125 passengers with their baggage;

- (c) Operate from existing international airports with no more than 9,500 feet of runway needed for take-off on a hot day and 7,000 feet of runway required to land; and
- (d) Operate over a range of 1,150-3,700 miles at supersonic speeds plus 250-1,150 miles at subsonic speeds.

Additional guidelines call for operating economies comparable with present subsonic jet transports; ability to comply with applicable civil air regulations; a useful lifetime of 15 years or 30,000 to 50,000 hours; engine noise comparable to present jet aircraft; and sonic boom characteristics which would generate no more than 2 pounds per square foot pressure rise on the ground while the airplane is accelerating and 1 1/2 psf. pressure rise during steady cruising flight.

Several major findings marked the reports made by the two contractors:

- -- The maximum allowable pressure rise due to sonic boom will be a controlling factor in the gross weight of a supersonic transport design.
- -- The NASA guidelines lead to an aircraft with a gross weight roughly one-third heavier than present subsonic jets.

- --Titanium, used as a structural material, yields a much lighter airplane, meeting the guideline requirements, than one constructed of stainless steel.
- --Reserve fuel requirements will be extremely important in the supersonic transport. Under some conditions, reserve fuel weight could be more than the payload. It appears possible that advanced traffic control techniques under development may ease the reserve fuel requirement.

The supersonic transport research program which has been pursued by NASA since the mid-1950's represents one of the agency's major efforts in advanced aerodynamic research. The study contracts now nearing completion were undertaken when NASA felt it had carried its investigation to the point where evaluation from an industrial design and operating viewpoint was needed to assess the research already completed and to guide future studies.

Several areas requiring additional research were highlighted by the Boeing and Lockheed study contracts. More research is needed on general aerodynamic efficiency, and on low speed stability and control. There is a requirement for an improved engineering understanding of the use of titanium as a structural metal. Additional work is also indicated in the

area of airworthiness and operating considerations to provide a sharper definition of the criteria which should be used in advanced transport aircraft designs.

The conference ending today was divided into two parts. Results of the feasibility studies were presented in the first sessions. During the second part, NASA scientists and engineers discussed research pertinent to the problems disclosed during the course of the Boeing and Lockheed contracts.

Participating in the sessions were staff members of NASA's Office of Advanced Research and Technology, including the Director of Aeronautical Research, who manages the supersonic transport research program for NASA as a part of the agency's responsibility to the national program. Also attending were the Administrator and other representatives of the Federal Aviation Agency under whose management the U.S. supersonic transport is being developed, and representatives of the National Aeronautics and Space Council, President's Office of Science and Technology, Civil Aeronautics Board, Department of Defense, Navy and Air Force, and members of NASA Advisory Committees.

Organizations outside the government who had representatives included the major domestic and U.S. international airlines; the Air Transport Association; eight major airframe manufacturers in addition to the two contractor firms; three major aircraft engine manufacturers; the Rand Corporation; and other interested user groups.

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DR. REID, RETIRED NASA OFFICIAL, CITED BY NAA AS 'ELDER STATESMAN OF AVIATION'

FOR RELEASE: IMMEDIATE

Dr. Henry J. E. Reid, who served as director of the Langley Research Center of the National Aeronautics and Space Administration for more than 34 years, has been selected by the National Aeronautic Association as an "Elder Statesman of Aviation" in recognition of his contributions to the progress of flight over a period of four decades.

The NAA citation recognized Dr. Reid for "his significant and enduring contributions over the years to the progress of aeronautics, and his demonstrated qualities of patriotism, integrity, and moral courage worthy of emulation." The embossed leather-bound NAA citation was signed by Martin M. Decker, president, and Arline Davis, secretary.

Dr. Reid was selected to receive the honor by the board of directors of the NAA, an organization formed in 1922 for the advancement of aeronautics. NAA, which has headquarters in Washington, established the "Elder Statesmen of Aviation" award six years ago to honor individuals who have devoted much of their career to the advancement of flight.

Dr. Reid, who received the award on the 60th anniversary year of powered flight, retired from the NASA in June 1961-- about 40 years after he joined the Langley staff as an engineer. He was appointed to head the center in 1926 and continued as director until May 1960, when he was succeeded by Dr. Floyd L. Thompson, present director. Dr. Reid was Senior Staff Associate during his last year of active service at Langley.

A native of Springfield, Mass., Dr. Reid graduated from Worcester Polytechnic Institute in 1919 with a B.S. degree in electrical engineering.

After working briefly in private industry, he inaugurated his Federal Civil

Service career at Langley on April 12, 1921-- four years after the laboratory

was established as the first research center of the former National Advisory

Committee for Aeronautics.

Dr. Reid's alma mater recognized his achievements in research in the field of flight in 1946 by awarding him the honorary degree of doctor of engineering. He won many other honors during his career at Langley.

Dr. and Mrs. Reid make their home on Lauren Drive in Gloucester Point. They have two children-- Henry J. E. Reid Jr., a scientist on the staff of the Instrument Research Division at Langley, and Mrs. George S. Knopf, a resident of Birmingham, Mich.

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November 1, 1963



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LANGLEY RESEARCH CENTER AWARDS ANTENNA TEST FACILITY CONTRACTS

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FOR RELEASE: IMMEDIATE

Hampton, Virginia - Two contracts totaling \$1,546,135 have been awarded by the National Aeronautics and Space Administration's Langley Research Center to begin construction of a Vehicle Antenna Test Facility to aid in solving space-craft communications problems.

One contract, for construction of the building in which the facility will be housed, was awarded to Nat Harrison Associates, Miami, Florida, in the amount of \$1,265,505.

The second contract, awarded to B. F. Goodrich, Sponge Products Division, Shelton, Connecticut, calls for the design and installation of anechoic chambers for the facility. It is valued at \$280,630.

The facility will include two large test chambers in which scientists will be able to measure the performance of antenna systems intended for use by space vehicles in an environment nearly free of radio reflection and interference.

The term anechoic means without echoes and describes the type of special construction used to achieve the necessary test environment.

Work on the primary construction contract is to begin at the end of February and is to be completed in 15 months.

February 5, 1964

7

NASA SELECTS HONEYWELL TO BUILD SCANNER SPACECRAFT FOR RELEASE: 3:00 P.M. FEBRUARY 14, 1964

(Released simultaneously in Washington, D.C. and Hampton, Virginia)

The National Aeronautics and Space Administration today selected Honeywell Aeronautical Division, Minneapolis, Minnesota, for negotiation of a contract to furnish three spacecraft for a horizon definition experiment called Project Scanner. Honeywell was one of 12 firms bidding for the contract which is valued at approximately \$1,000,000.

Project Scanner is a phase of the horizon definition research carried out by the Langley Research Center, Hampton, Va., under the general direction of NASA's Office of Advanced Research and Technology. Horizon definition and measurement are important to spacecraft stabilization and guidance techniques.

The contract to be negotiated with Honeywell calls for construction of two Scanner payloads plus one backup, with delivery expected early in 1965. The Scanner vehicles will be flown on sub-orbital ballistic trajectories from NASA's Wallops Station. Wallops Island, Va.

Each vehicle will carry as prime instrumentation a radiometer and a star telescope called a star mapper. The telescope will provide accurate measurements of the attitude of the spin-stabilized spacecraft.

The dual radiometer assembly will measure the energy from the horizon in two specific wavelength bands, one in the region of 14 to 16 microns associated with carbon dioxide in the upper atmosphere and the other in the 20 to 40 micron region associated with water vapor.

Usual methods of defining a true vertical cannot be employed in an orbiting

spacecraft because it is weightless. In their place, instruments to measure the horizon have been used, but they have not always provided the required degree of accuracy. Project Scanner is designed to measure the horizon in clearly defined regions of the spectrum so that more precise instruments making use of the horizon can be designed and built for future space missions.

The Project Scanner radiometer and star mapper will be built under separate contracts. Proposals by prospective contractors are still being evaluated.

Launch vehicle for Project Scanner will be a three stage solid propellant rocket. The first stage will be a Castor with two strap-on Recruit motors; the second stage a SKAT; and the third an X-248.

Langley Research Center will manage Project Scanner under the over-all direction of the Office of Advanced Research and Technology, NASA Headquarters.

Project Manager at Langley is Howard J. Curfman, Jr., of the Applied Materials and Physics Division. John A. Dodgen of the Instrument Research Division is Project Experimenter. Maurice L. Sisson of the Flight Vehicles and Systems Division is Technical Project Engineer.

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SMALL BUSINESS BIDS ASKED FOR TWO LANGLEY CONSTRUCTION JOBS

FOR RELEASE:

Hampton, Virginia, -- Langley Research Center of the National Aeronautics and Space Administration has issued invitations to bid on two construction projects totalling more than \$1,000,000, with a special provision that both jobs are to be done by small business firms.

In making the bids available only to small businesses, NASA is carrying out a national policy which requires that a fair proportion of government procurement be placed with small business concerns in the interest of maintaining the nation's full productive capacity.

One of the two construction projects calls for the installation of an underground utilities tunnel 3,600 feet long, extending from the Heating Plant in the West Area of Langley Research Center to the vicinity of the Unitary Plan Wind Tunnel Building.

The invitation to bid includes a brick and concrete wing to be added to the Heating Plant and the construction of a new access road to the Lunar Landing Research Facility.

Approximate value of the entire job is \$1,000,000. Bids will be opened at Langley Research Center on April 2.

The tunnel itself will be a reinforced concrete structure seven feet high by seven feet wide. In it will be piping to carry steam, water, compressed air, and condensate. The contractor will install exhaust fan equipment, pumps, and a complete electrical system.

A second project specially set aside for small business firms calls for construction of a two story addition to the Center's Headquarters Building.

The work will consist of modifications to the existing building and the construction of a complete new steel frame and brick masonry addition for use as office space.

Approximate value of the contract will be \$200,000 and bids will be opened on March 25.

Langley procurement officials explained that a small business construction firm is defined as an independently owned and operated company which is not dominant in its own field, and whose average annual receipts for the past three fiscal years have not exceeded \$7.5 million.

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LANGLEY RESEARCH CENTER TAKES PART IN 14 SCIENCE FAIRS IN FOUR STATES

FOR RELEASE: IMMEDIATE

Hampton, Virginia -- Langley Research Center will present awards in 14 regional and state science fairs in Virginia, North Carolina, South Carolina, and West Virginia as part of the annual participation of the National Aeronautics and Space Administration in the National Science Fair-International.

NASA certificates of outstanding achievement in the senior high school section will be presented in six categories—including aerodynamics and space flight, space vehicles, space flight systems, space life sciences, space physical sciences, and space electronics and communications.

Langley will present certificates in the six awards categories at fairs at Portsmouth, Hopewell, and Roanoke, Virginia; Durham and Charlotte, North Carolina; Orangeburg, Columbia, Florence, Aiken, and Greenville, South Carolina; and West Liberty, Bluefield, Salem, and Institute, West Virginia. Other NASA centers will take part in regional fairs in their areas.

NASA also participates each year in the National Science Fair-International, which this year will be held in Baltimore May 6-9. NASA will select two finalists for the six NASA awards, with each winner receiving a NASA certificate of merit and an invitation to spend about a week at an NASA research center selected on the basis of the interests of the awards recipients. Each student winner will be permitted to select a teacher to make the visit with him.

Four Langley scientists will serve as judges in one of the regional fairs—
the Tidewater Science Congress to be held April 4 at the Woodrow Wilson High
School in Portsmouth. They include Robert O. Schade, Gerald D. Walberg, Howard B.
Edwards, and Dr. George D. Sands.

They will represent Langley as judges for the six NASA awards in the senior high school section. As representatives of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics, they will also assist officials of the Tidewater Science Congress in selecting winners of other science awards in both the junior and senior sections.

March 16, 1964

KEY MANAGEMENT APPOINTMENTS SET AT NASA LANGLEY RESEARCH CENTER

FOR RELEASE: IMMEDIATE

Hampton, Virginia -- Three key appointments in the management organization of the Langley Research Center were announced today by Dr. Floyd L. Thompson, Director.

Mr. Eugene C. Draley has been appointed Assistant Director for Flight

Projects, a new position which brings flight project management under a single

office. Mr. Draley has been an Assistant Director of the Center since 1959.

Dr. John E. Duberg has been named an Assistant Director, responsible for the research activities of two major divisions of the Center -- the Dynamic Loads Division and the Structures Research Division. Dr. Duberg has been serving as Technical Assistant to the Associate Director of Langley.

Mr. Francis B. Smith has been appointed an Assistant Director, in charge of the Analysis and Computation Division, the Instrument Research Division and the Space Mechanics Division. He has been serving as Chief of the Instrument Research Division. His appointment as Assistant Director fills a vacancy caused by the resignation of Mr. Clinton E. Brown.

Among the groups reporting to Mr. Draley in his new assignment will be the Flight Reentry Programs Office (Project FIRE); the Lunar Orbiter Project Office; the MORL Studies Office; the Scout Project Office; and the Langley Research Center-Pacific Missile Range Field Projects Office.

A Langley scientist, Mr. Andrew G. Swanson, currently away from the Center on a Sloan Fellowship at the Massachusetts Institute of Technology, will become Technical Assistant to Mr. Draley upon completing his studies.

As an Assistant Director, Dr. Duberg will continue to carry additional responsibilities concerned with Langley's relationships with the academic community and with the development of the Space Radiation Effects Laboratory.

Mr. Howard B. Edwards, now Assistant Chief of the Instrument Research
Division, will serve as Acting Chief following Mr. Smith's appointment as an
Assistant Director of the Center.

Biographies of Mr. Draley, Dr. Duberg and Mr. Smith are attached. Please note that the biographies list their former titles.

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HAMPTON, VIRGINIA

FINAL CONTRACT SIGNED BY NASA FOR THREE SCANNER SPACECRAFT

FOR RELEASE: IMMEDIATE

Hampton, Virginia - The National Aeronautics and Space Administration today completed negotiations with Honeywell Aeronautical Division, Minneapolis, Minnesota, for a contract to furnish three spacecraft for an horizon definition experiment called Project Scanner.

Total cost of \$1,224,616 includes design, fabrication, integration, qualification, environmental testing and some launch support services. Delivery is set for early 1965.

Project Scanner is a phase of the agency's horizon definition research carried out by the Langley Research Center, Hampton, Virginia, under the general direction of NASA's Office of Advanced Research and Technology. Horizon definition and measurement are important to spacecraft stabilization and quidance techniques.

The Project Scanner vehicles will be flown on suborbital ballistic trajectories from NASA's Wallops Station, Wallops Island, Virginia.

Each Project Scanner vehicle will carry as prime instrumentation a dual radiometer assembly and a star telescope called a star mapper.

The dual radiometers are being designed, fabricated, tested and calibrated for NASA by Santa Barbara Research Center, Goleta, California, a subsidiary of Hughes Aircraft Company, under a \$621,150 incentive-type contract.

Starmapper assemblies to be used in Project Scanner are being built for NASA by Baird-Atomic, Inc., Cambridge, Mass., under a separate \$319,477 contract.

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(June 29, 1964)

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION HAMPTON, VIRGINIA

NASA INCENTIVE CONTRACTING SEMINAR SLATED AT LANGLEY RESEARCH CENTER

FOR RELEASE: IMMEDIATE

Hampton, Virginia - Top management of the Langley Research Center will attend an incentive contracting seminar to be sponsored at Langley by the National Aeronautics and Space Administration on Thursday, September 10.

The day-long session will be conducted by Ralph Nash, George
Washington University professor, assisted by Warren K. Linnerooth of the
office of procurement at NASA Headquarters in Washington.

The seminar will be one of several similar sessions scheduled during September and October at NASA Headquarters and at the other 12 NASA field centers.

George Friedl Jr., NASA deputy associate administrator, announced that the agenda will include profit motivation in contracts, work definition and incentive structure, effective structuring, relationship of technical control to incentives management and evaluation of incentives with other motivating forces.

August 25, 1964

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LANGLEY RESEARCH CENTER
LANGLEY STATION
HAMPTON, VIRGINIA

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NASA CEREMONY TO MARK BEGINNING OF ORIENTATION FOR NEW EMPLOYES

FOR RELEASE: IMMEDIATE

Hampton, Virginia - A year's program of general orientation for 60 recent university graduates who are beginning their professional careers at the Langley Research Center of the National Aeronautics and Space Administration will get under way at a ceremony at 8:30 a.m. Wednesday (October 7) in the NASA east area conference room.

Dr. Floyd L. Thompson, Langley Director, will preside at the opening session and will welcome the group to the Center.

Irving L. Fuller, Executive Vice President of the Peninsula Chamber of Commerce, will welcome the new employes to this area. He will discuss the various services which the chamber provides to the NASA and will introduce to the group some of the attractions of the community by showing the chamber's motion picture, "The Historic Virginia Peninsula." Fuller will be introduced by Dr. Thompson, who is an honorary member of the Board of Directors of the Peninsula Chamber of Commerce.

The new employes, who have already been assigned to their respective sections, include aerospace technologists, mathematicians, science editors, and technical librarians. During the coming year, they will supplement their normal activities by attending general orientation lectures and touring research facilities to acquaint them with the work of the Center and to illustrate how their contributions are related to the accomplishment of Langley's aerospace mission.

The orientation is one of several educational programs conducted by

Langley's training office, headed by S. Walter Hixon Jr., supervisory employe development officer.

This will mark Fuller's fifth appearance at the inaugural session of Langley's orientation program. Fuller, former Newport News, Virginia, business executive who has served as an official of the chamber of commerce since 1954, is active in community affairs and has traveled extensively as a representative of the Peninsula and Virginia in the promotion of the tourist business in this state.

Fuller is a director and member of the executive board of the Peninsula Industrial Committee, served five years as committee chairman of the World Trade Conference, and for seven years was co-general chairman on the Peninsula of Armed Forces Day. He is a past chairman of 13th District Key Clubs of Virginia, having been instrumental in helping to organize key clubs in the area. He is a past secretary and director of the Newport News-Warwick Red Cross; past campaign co-chairman and director of the former Newport News-Warwick Community Chest; member in 1957 of the International Naval Review Committee; and sponsor of the Peninsula Orchestra Association. He is a member of the James River Country Club and of the St. Andrews Episcopal Church. He has four children and makes his home at 4 Douglas Drive, Newport News, Virginia.

October 5, 1964

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION HAMPTON, VIRGINIA

NASA SCIENTIST DISCUSSES RESEARCH FOR REDUCING HYDROPLANING HAZARDS 4

FOR RELEASE: IMMEDIATE

Hampton, Virginia - A technique under study at the Langley Research Center of the National Aeronautics and Space Administration and which offers a promise of reducing the hazards of operating airplanes on water-flooded runways is one of the discussion topics at a meeting this week in New York of the Flight Safety Foundation.

Walter B. Horne of Williamsburg, Virginia, a scientist in Langley's Dynamic Loads Division, is one of several speakers at the Flight Safety Foundation's four-day International Air Safety Seminar on Hydroplaning, which concludes October 15. In a paper on "Air Jets-- a Possible Solution for Hydroplaning and Other Associated Runway Wetness Problems," Horne is reviewing studies under way at Langley's Landing Loads Track research facility.

Hydroplaning, a phenomenon of importance to both airplanes and automobiles, may occur at a certain speed in heavy rain—the tire riding up on a film of water and acting like a water ski. When a tire hydroplanes, there is a drop in the tire—highway friction available for braking or traction—and a loss in steering control. Sometimes, a hydroplaning tire stops rotating completely without application of brakes.

In his New York talk, Horne is presenting preliminary results of a twin-air-jet arrangement placed in front of an airplane tire at the Landing Loads

Track. The tire was transported at high speeds on a steel carriage which travels on rails down a concrete runway. The early results indicate that, for a runway flooded to a water depth of three-tenths of an inch, the air blast from the jets cleans the water from the tire path up to speeds of at least 140 miles an hour.

(October 13, 1964)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION

HAMPTON, VIRGINIA

APPRENTICE GRADUATION OCTOBER 16 AT NASA LANGLEY RESEARCH CENTER FOR RELEASE:

IMMEDIATE

Hampton, Virginia - Dr. Seymour L. Wolfbein, Deputy Manpower Administrator and Director of the Office of Manpower, Automation and Training, U. S. Department of Labor, will be the principal speaker at the 22nd annual graduation ceremony of the National Aeronautics and Space Administration's Apprentice School at 1:30 p.m. Friday (October 16) at the Langley Research Center. Dr. Wolfbein will be introduced by Robert J. Lacklen of Washington, D. C., NASA Director of Personnel.

Dr. Floyd L. Thompson, Director of the Langley Research Center, will preside at the ceremony to be conducted in the NASA Activities Building in the West Area.

The Reverend Chester L. Brown, Pastor of the Hampton (Virginia) Baptist Church, will give the invocation.

Edward N. Hicks of Granite Falls, North Carolina, who will receive a journeyman completion certificate as experimental electronic mechanic, was elected by the graduates to represent them as the class speaker.

Musical selections will be provided by the Tactical Air Command Band under the direction of Captain Carl Costenbader. CWO Eugene A. Dieter is assistant director.

The NASA Apprentice School was established at Langley in December 1941 and the first class was graduated in February 1943. This year's 14 graduates will bring to 580 the number of journeymen to receive completion certificates in the school's 23-year history. Candidates are chosen for the apprenticeship program on the basis of examinations given by the Civil Service Commission.

Journeyman completion certificates are awarded jointly by NASA and the Bureau of Apprenticeship of the U. S. Department of Labor. They will be presented by S. Walter Hixon, Jr., Supervisory Employee Development Officer at the Langley Research Center. Frank Penland is the Apprentice Administrator.

The graduates, whose birth places are listed below, will receive four-year completion certificates as follows:

Electrician: William H. Clarke, Washington, D. C.; I. Quinby Collier, Jr., Newport News, Virginia; and James E. Spencer, Hampton, Virginia.

Experimental Electronics Mechanic: John A. Guy, Portsmouth, Virginia; Charles T. Hall, Wichita Falls, Texas; N. Edward Hicks, Granite Falls, North Carolina; Carroll W. Rowland, Waynesville, North Carolina; John H. Soule, Brooklyn, New York; Charles W. Stump, Dayton, Ohio; and Leonard T. Twigg, Cumberland, Maryland.

Experimental Machinist: Robert L. Reaser, Jersey Shore, Pennsylvania;
Thurman L. Robbins, Brunswick Co., North Carolina; and Victor E. Wilson, Newport
News, Virginia.

Experimental Metal Worker: William C. Tennis, Newport News, Virginia.

A native of New York City, Dr. Wolfbein received his Bachelor of Arts degree from Brooklyn College and his masters degree and doctorate from Columbia University.

He has been with the Labor Department since 1942, except for two years of military service in the Army. He joined the Labor Department as Chief, Occupational Outlook Division, and Chief, Division of Manpower and Employment,
Bureau of Labor Statistics. From May 1959 to July 1962 he was Deputy Assistant Secretary of Labor and, in addition, from April 1961, was Director of the Office of Automation and Manpower. He was appointed to his present position in July 1962.

Dr. Wolfbein was recipient of the Columbia Alumni Award of Honor in 1954

and the Distinguished Service Award of the U. S. Department of Labor in 1955 and in 1961. He is a fellow of the American Statistical Association; a fellow of the American Association for the Advancement of Science; professional member of the National Vocational Guidance Association; formerly chairman of the Occupational Research Section and past president of the Washington Statistical Society.

He is Adjunct Professor of Economics at the American University, Washington, D. C. He is author of several books and has contributed articles to technical journals on employment, unemployment and career guidance.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION

LANGLEY STATION HAMPTON, VIRGINIA

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FOR RELEASE: IMMEDIATE

NASA AWARDS WILL BE PRESENTED AT LANGLEY CEREMONY WEDNESDAY

Hampton, Virginia - An annual ceremony for the presentation of awards to the staff of the Langley Research Center of the National Aeronautics and Space Administration will be held at 10 a.m. Wednesday (October 21) at Langley's Activities Building.

Three Presidential citations will be presented to organizational units and 260 staff members will be recipients of meritorious service emblems, according to an announcement by Dr. Floyd L. Thompson, Director of the Langley Research Center.

T. Melvin Butler, Assistant Director for Administration, will preside at the ceremony.

The citations to organizational units are signed by President Lyndon B.

Johnson and NASA Administrator James E. Webb and are in special recognition of outstanding contributions to greater economy and improvement in Government operations during the tenth anniversary year of the Federal Incentive Awards Program.

One of the awards will be shared by three divisions— the Analysis and Computation Division, headed by Paul F. Fuhrmeister; the Research Models and Facilities Division, of which Harold I. Maxwell is Chief, and the Mechanical Service Division, with William B. Mayo in charge. The award is for the team effort that went into the expeditious development of a new technique for production of large relief maps used as an integral part of a research facility now under construction— the Lunar Orbit and Landing Approach (LOLA) simulator. The facility, which includes large relief maps of certain areas of the Moon, is designed for use in investigating man's ability to perform control tasks re-

lated to the orbiting and landing approach phases of the lunar mission.

Another award will go to the Instrument Construction Shop Section for the economical and effective application of a vacuum furnace brazing technique in the construction of instruments for use in laboratory and flight research. The section is part of the Machine Branch of the Mechanical Service Division.

The Space Mechanics Division, headed by William H. Phillips, is being honored for the concept and application of a cable support system for Langley's Rendezvous Docking Simulator which operates suspended from the high ceiling of NASA's flight hangar. The use of a cable support instead of the rigid-frame support system usually employed in such a facility resulted in a great savings to the Government.

Dr. Thompson will present a NASA 40-year meritorious service emblem to Charles C. Decker, a member of the staff of the Mechanical Service Division.

Seven NASA 30-year pins will be presented by Charles J. Donlan, Associate Director, to Buford R. Hunt, Bernard Mattare, and Charles Moore III, all of the Mechanical Service Division; Everette W. Jones, Procurement Division; Joseph A. Stora, Research Models and Facilities Division; Warren W. Thomas, Instrument Research Division; and David R. Woodward, Full Scale Research Division.

Butler will present service emblems to 252 staff members who have completed 20 years of Government service.

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October 19, 1964

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION HAMPTON, VIRGINIA

NASA LANGLEY RESEARCH CENTER
MAKES SPACE HISTORY IN NOVEMBER

FOR RELEASE:

Hampton, Virginia - November was a history-making month in space for scientists at the NASA Langley Research Center, which orbited three scientific satellites-- two of them with a single launch vehicle.

This marked the first time the National Aeronautics and Space Administration orbited more than one satellite with a single rocket, and was only the second time in the agency's six-year history that one of its centers placed three satellites in orbit the same month.

The Langley-developed Scout was the launch vehicle for the three satellites which included Explorer XXIII, sent aloft Nov. 6 from the NASA Wallops Station, Wallops Island, Virginia, and Explorer XXIV and Explorer XXV, orbited by a single rocket Nov. 21 from the Pacific Missile Range, near Lompoc, Calif.

Explorer XXIII, a 295-pound payload built around the fourth stage of the Scout, contains sensors to measure the rate at which the skin of a spacecraft may be punctured by minute meteoroid particles in space. It is 24 inches in diameter and 92 inches long.

The two-in-one satellite launch included a 12-foot, 19-pound plastic sphere which was automatically inflated in space and is orbiting the earth as Explorer XXIV to measure air density and heat at the fringes of the atmosphere; and a nearly spherical 24-inch-diameter device which-- as Explorer XXV-- is providing data on the bombardment of the atmosphere by energetic particles from space.

Scout is a four-stage, solid-propellant launch vehicle developed under Langley's direction to carry payloads of varying sizes on orbital, space probe

or reentry missions. The vehicle is managed by Langley's Scout Project Office, headed by Eugene D. Schult.

A number of Langley staff members played key roles in the two Scout launches in November.

The Langley team for the Nov. 21 launch included William J. O'Sullivan Jr., principal scientific investigator for Explorer XXIV; Gerald M. Keating, scientific investigator and project scientist; Claude W. Coffee Jr., scientific investigator and project manager; Charles V. Woerner, Explorer XXIV spacecraft manager; and Robert E. Johnson, technical project engineer. For the launch vehicle, James R. Hall was vehicle technical manager; C. T. Moore Jr., payload coordinator; Seymour Salmirs, performance assurance engineer; Elmer J. Wolff, system integration engineer; and Robert M. Dvorak, range coordinator. Langley vehicle test director was V. Dean Crowder.

Earl Hastings Jr. was project manager for Explorer XXIII. Other Langley team members were Hugh C. Halliday, technical project engineer; Leon V. Taylor, instrumentation project engineer; Jose M. Alvarez, operations manager; and Charles A. Gurtler, Alfred G. Beswick, James H. Siviter Jr., and James Bene, experimenters. For the launch vehicle, James D. Church was project field operations director; C. T. Moore Jr., payload coordinator; Leo Forrest, systems integration engineer; Clarence Robins, mission assurance engineer; Kermit G. Pratt, project manager for Scout loads experiment; Moses J. Long, systems engineer for loads experiment; and Charles J. Laird, instrumentation engineer for loads experiment.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

LANGLEY RESEARCH CENTER

NASA HOST TO 17 HIGH SCHOOL SCIENCE FINALISTS IN REGIONAL COMPETITION TO SELECT BEST PAPERS

FOR RELEASE: IMMEDIATE

Hampton, Virginia - Seventeen high school science students from six southern states, including five from Virginia, will participate in a regional Youth Science Congress to be conducted on the Peninsula Wednesday, Thursday, and Friday by the National Science Teachers Association in cooperation with the host National Aeronautics and Space Administration.

LANGLEY STATTON
HAMPTON, VIRGINIA

Written reports prepared by the 17 students on science projects which they carried out at their respective schools were declared best in their region and won them the right to present the papers at this week's Youth Science Congress at the NASA Langley Research Center in competition to select the three top technical documents.

The students are in Region III of the eight-region National Youth Science Congress, including Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, the Canal Zone, and Puerto Rico. The three winners will be eligible to attend the National Youth Science Congress to be held later this year in Washington, D. C., where their papers will be judged along with 21 winners of the seven other regional contests in the United States.

The five Virginia students include two from the Tidewater area-- Robert J.

Pariser of Norfolk Academy and Douglas Brenner of Churchland High School. Other

Virginians are Joe Laughon Jr. and Aubrey Strode Jr., both of Liberty High

School in Bedford, and William P. Pala Jr., of the George C. Marshall High

School in Falls Church.

North Carolina is represented by two students—— Charles B. Beasley of Grainger High School in Kinston and Noel Dunivant Jr. of Whiteville High School.

Other state representatives include: Georgia-- Edward H. Shelander Jr. of Glynn Academy in Brunswick and Michael C. Yaksh of Dykes High School in Atlanta; Florida-- Larry C. Deeb and Charles W. Jernigan, both of Leon High School, Tallahassee; Stephan Kolitz, Morris Summers, and Charles G. Ward, all three of Terry Parker High School, Jacksonville; Kentucky-- Miss Mary L. Fields and Miss Joan M. Keene, both of Bethlehem High School, Bardstown; and South Carolina-- Joseph B. Walters Jr., A. C. Flora High School, Columbia.

The students arrive at the Chamberlin Hotel Wednesday. They will attend a dinner there that night to hear a discussion of the plans for the science congress by S. Walter Hixon Jr., head of educational programs and services at the Langley Research Center, and Alan Mandel, professor at Frederick College in Portsmouth and a representative of the NSTA. Hixon, Mandel, and Malcolm P. Clark, NASA employe development officer at Langley, are serving as program coordinators for the science congress.

Thursday and Friday, the students will assemble in the conference room of NASA Building 587 in the East Area of the Langley Research Center to present their papers. These include written reports of investigations or research—type projects or field studies carried out by the individual students and cover the problem studied, including procedure and instrumentation, and the results or findings obtained.

Judges of the papers to be presented orally by the respective authors will be Dr. Samuel Katzoff, research assistant in the Office of Langley's Associate Director; Dr. George F. Pezdirtz, head of the spacecraft materials section in Langley's Applied Materials and Physics Division; and Franklin D. Kizer of

Richmond, state supervisor of science, State Department of Education.

Thursday's activities include the presentation of five papers between 8 a.m. and 10 a.m., and the reading of five other papers from 1:45 p.m. to 3:40 p.m. In between the two technical sessions, the students will visit NASA aeronautical and space facilities to see illustrations of Langley research activities and will have lunch with Langley officials in the West Cafeteria. At the luncheon, Dr. Floyd L. Thompson, Director, will welcome the group to the Langley Research Center. A dinner meeting of the students at the Chamberlin Hotel Thursday night will feature a talk by Dr. Stuart L. Seaton, special assistant in Langley's Instrument Research Division.

At the Friday session at Langley, the remaining seven papers will be presented between 9 a.m. and 11:40 a.m. Awards to the authors of the three best papers will be presented by Dr. Katzoff at a luncheon meeting in the West Cafeteria, to be followed by a tour of Project Apollo simulation facilities and the Instrument Research Division, which will conclude the congress.

In the organization of the NSTA-NASA Youth Science Congress, the United States is divided into eight geographic regions and all high school students in grades 10, 11, and 12 are eligible to participate. The Congresses are designed to give students an opportunity to report research-type science projects, to compete for regional and national honors, and to visit NASA facilities in the various regions throughout the country. The 17 students selected from a region receive a certificate of participation as well as a chance to win a national award.

The following are the papers to be presented at the Region III Congress:

Strode, "Experimental Magnetohydrodynamic Power Generator"; Miss Fields,

"Arcular Geometry"; Deeb, "A Synthesis of Amino Acids"; Ward, "The Evolution of

Lunar Topography"; Shelander, "The Effect of a Radio Frequency Field Upon the Molecular Bonds of Water"; Pariser, "Mutation of Proteus Vulgaris by Enzymatic Action of Staphylococcus Aureus"; Dunivant, "A Complete Rocket, Launching, and Tracking System"; Walters, "Light Amplification by Stimulated Emission of Radiation"; Kolitz, "An Original Investigation of Complex Graphing"; Miss Keene, "The Influence of Different Dietary Carbohydrate Sources and Penicillin or Arsanilic Acid on Chick Performance"; Yaksh, "Contact Zone Phenomena in Shock Tube Flows Due to Boundary Layer Effects"; Summers, "The Polyphenol Oxidase System of a Decapod Crustacean"; Pala, "The Cathodoluminescence Hypothesis of the Nature and Cause of Lunar Luminescent Phenomena"; Laughon, "Ultrasonic Oscillation as a Combustion Rate Modulator in Solid Fuel Rockets"; Beasley, "Bacterial Mutations Induced by Penicillin"; Jernigan, "Gaseous Ions and Plant Growth"; Brenner, "The Effects of Ionizing X-Irradiation on the Morphology and Physiology of Amoeba Proteus".

March



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION HAMPTON, VIRGINIA

SMALL BUSINESS FIRMS ASKED FOR BIDS ON NASA FATIGUE RESEARCH LABORATORY

FOR RELEASE: IMMEDIATE

Hampton, Virginia ~ The Langley Research Center of the National Aeronautics and Space Administration has issued an invitation for bids on a new construction project valued at approximately \$1,000,000, with the special provision that the work is to be done by a small business firm.

In making the bids available only to small businesses, NASA is carrying out a national policy which requires that a fair proportion of government procurement be placed with small business firms in the interest of maintaining the nation's full productive capacity.

The new building to be called the Fatigue Research Laboratory, was authorized by the Congress last year as part of the Fiscal Year 1965 NASA construction program. Bids for the project will be opened April 23, at 2:00 p.m., and completion of the work will require 440 days.

Site for the new building is in the Langley Research Center West Area, adjacent to the existing Structures Research Laboratory (Building 1148). A group of frame structures now occupying the site will be removed as part of the contract.

The new laboratory will be a steel frame building approximately 100 by 200 feet by 30 feet high. Foundation piling will be driven to support the structure, which will include 5,000 square feet of heavy duty floor.

Fatigue is the engineer's term for a weakening or deterioration of metal or other material occurring under repeated loads. It has been an important area of research at Langley for many years.

The new structure will bring under a single roof fatigue research projects now in scattered temporary areas, and will permit an extension of research which is needed to establish the technology required by supersonic and hypersonic aircraft and space vehicles intended for long-term or reusable service.

The constant search and development of new materials required in the nation's space and aeronautical programs has intensified the need for systematic fatigue research, since the properties of the new materials cannot be determined from research on dissimilar specimens.

Langley procurement officials explained that a small business construction firm is defined as an independently owned and operated company which is not dominant in its own field, and whose average annual receipts for the past three fiscal years have not exceeded \$7.5 million.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION

HAMPTON, VIRGINIA

NASA LANGLEY PERSONNEL OFFICIAL RECEIVES CAREER EDUCATION AWARD

FOR RELEASE: **IMMEDIATE**

Hampton, Virginia - William L. Williams, an official in the Personnel Division at the Langley Research Center of the National Aeronautics and Space Administration, has been chosen to receive the annual Career Education Award of the National Institute of Public Affairs.

Williams, Head of Langley's Classification, Wage Administration and Organization Branch, was one of 55 civil servants to receive the award, which provides a year of graduate study related to problems of public policy and the management of public programs.

The awards, presented in recognition of exceptional ability, outstanding performance, and high potential for future leadership shown by nominees from throughout the United States, are made under a Ford Foundation grant and coyer tuition and a \$1,000 cash grant. The award winners continue to receive their salaries while attending school.

Williams will attend Indiana University under the awards program during the next academic year, participating in a new educational effort to prepare career officials for executive posts in government scientific and engineering programs. Five other universities participate in the Career Education Awards plan -- Chicago, Harvard, Princeton, Stanford, and Virginia.

Williams was born July 28, 1930; in Cleveland, Ohio. He received a B. S. Degree in Business Administration from Youngstown University in Ohio in 1959, and joined the staff of Langley's Personnel Division in May 1959. He received an M. A. Degree in Personnel Management from George Washington University in April 1961. He is president of the Hampton Roads Classification Association, comprised of representatives of Federal installations in this area. He lives at 347 Eltham Court, Hampton, Virginia.

The National Institute of Public Affairs, Mocated in Washington, D. C., is a non-profit educational organization dedicated to improving the quality of the public service and the ideas and information used in developing public policy.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ANGLEY RESEARCH CENTER

HAMPTON, VIRGINIA 23365

Phone: 703 722-7961, Ext. 4866

INQUIRING STUDENTS ADDING SPARK
OF YOUTH TO ADVANCING SPACE AGE

FOR RELEASE: IMMEDIATE

agh!

Hampton, Virginia -- Aerospace is a magic word, particularly to students all over the world. One indication of this is the large volume of mail received by the National Aeronautics and Space Administration from young persons seeking information on the subject.

There is a virtual avalanche of such mail at the Langley Research Center, with the annual volume approaching 10,000 letters, double what it was two years ago. All signs point to a continuing increase as the science of flight advances.

Langley's Office of Public Affairs has the task of answering most of the letters-- mailing selected educational folders and brochures on various aspects of the aerospace program published for the purpose at Langley and by NASA Headquarters in Washington, D. C.

The publication and distribution of these documents to students and others interested in the aerospace program are part of NASA's effort to disseminate information to the public and to encourage an interest in science among the younger generation.

Many of the letters are routine-- but a few of them are as different as the projects about which the students inquire.

Some of the more aggressive students literally "aim for the moon" in making their requests— asking for information on just about every pro-

ject since the flight of the Wright Brothers over 61 years ago.

A few are considerate to the extreme-- such as the Davis, California, student who requested several pamphlets on space, but added this post-script: "If I am bothering you, you do not have to answer this letter." Or the Chester, South Carolina, youngster who said he was in no hurry for the information "as I know how much you have to do, but I would like to have it as soon as possible."

A Seaford, New York, boy asked for a fast delivery of his requested information, "because these pamphlets will play a strong factor on my term report in eighth grade general science." A Mt. Airy, North Carolina, student conceded that "your help will be very helpful to me."

The building of rockets and spacecraft is a popular student hobby.

Some of the launch vehicle models are designed for flight, but performance was not important to the Laurel, Nebraska, young man who wrote that he was "trying to construct a homemade rocket which would not necessarily have to work, but be very impressive." A Pensacola, Florida, student promised that the NASA information "will be used in helping me in building this rocket and our school's bullinton bord."

The publications Langley makes available to students are free-- but occasionally a letter contains money in anticipation that there will be a small charge for brochures. The money is returned to the writer when the documents are mailed.

This practice meets with student approval, as evidenced by a young girl writing from Virginia Beach, Virginia, to express appreciation for booklets she received: "Thank you for returning my 15 cents. The fact that you did not have to and did increases my respect for you and others at Langley."

Another Virginian -- from Richmond -- who apparently handles his parents' money with reckless abandon emphasized that the information he wanted should be free -- "but if you have some extra well information that costs under 50 cents send this and I will send the money right after."

A confident youngster from Azusa, California, stating that "I am contributing my services to a school committee on space advancement," asked for some NASA documents the group could use in its studies. "Any charge would be looked upon as slight, not exceeding \$5. This charge, if any, would be paid C.O.D. My colleagues and I send our greatest thanks."

Most of the inquiring students are precise in their demands, but not all of them. A Long Island, New York, youngster wrote that he was "particularly interested in a booklet-- I do not know its name-- with a green cover and fairly numerous in pages."

Since scientific ability is not always accompanied by a flair for spelling or writing, there apparently is no cause for alarm at the letters received from future scientists in Richmond, Indiana-- "I am study about jets and misels in Science. I no some kid that got a picture of a misel and I sure liked it" or Long Beach, New York-- "Please send me some stuf on rockets and controls and other stuf about rockets."

One letter reveals that there must be a few doubting Thomases in Colerain, North Carolina. A student requesting information on the solar system said he wanted it for school work and home use-- "I'm proving to some men that there is a planet and moon."

Another message is evidence that one does not have to be old to be a veteran of the space age. "I have liked space sence I was a baby,"

INQUIRING STUDENTS ADDING SPARK.....

wrote a 12-year-old boy from Elmore Park School in Memphis, Tennessee,
"and I hope to be good at it when I get in collage."

Here are excerpts from a few other letters:

Richmond, Virginia: "Please send me a list of constellations for the months of 1965."

Conway, South Carolina: "I would appreciate any information on space shots previously shot."

Royersford, Pa.: "Please send pictures of Langley and what goes on in each building during the day and night."

One of the most down-to-earth explanations for the growing student mail is supplied by a young space enthusiast of Montgomery, Alabama:

"The reason we write to you is because we can't find enough information in books. I have found that when you write to a company you get an unexpected amount of important facts.

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LANGLEY RESEARCH CENTER
LANGLEY STATION
HAMPTON, VIRGINIA 23365
Phone: 703 722-7961, Ext. 4866

NASA COOPERATES IN NATION'S YOUTH OPPORTUNITY CAMPAIGN

FOR RELEASE:

Hampton, Virginia -- Langley Research Center will participate in President Johnson's Youth Opportunity Campaign by hiring 35 summer employees aged 16 through 21, Dr. Floyd L. Thompson, Director, announced today. The new positions are in addition to the normal National Aeronautics and Space Administration summer employment and college intern programs which Langley has supported for a number of years.

Langley and other NASA Centers are joining with Federal agencies and business firms throughout the country in a broad effort to provide training and work opportunities for many of the 2,000,000 young people who will enter the nation's work force this month. NASA Headquarters in Washington, D. C., and II field installations will employ a total of 330 persons under the Youth Opportunity Campaign.

The 35 at Langley, who will be selected with the assistance of the Virginia Employment Commission, will come from the Hampton, Newport News and York County areas. Their assignments at the NASA research establishment will be based on their skills and abilities.

In addition to the Youth Opportunity Campaign employees, Langley will add to its rolls about 100 summer employees in the college intern program, all of them college seniors or above. These students of science and engineering will obtain valuable work experience in a research environment,

and many of them may later select a career with NASA or in the many industrial organizations supporting the national aeronautical and space programs.

More than a dozen college professors of science and engineering from throughout the United States will also spend 10 weeks at Langley during the summer, in an intensive program to acquaint them at first hand with the most recent research developments in aeronautics and space technology. Each faculty member will use the training period to gather material to be passed on to his students during the next academic year.

As a further aspect of Langley's 1965 summer program, over 100 students enrolled in cooperative education plans supported by NASA will arrive at the Center during June to begin a portion of their on-the-job training. About half of them will return to campus for the autumn semester in the NASA co-op program of alternate periods of work at Langley and in-residence college study.

Dr. Thompson stated that Langley is proud to serve as a Federal agency example in Tidewater Virginia to support the President's effort to provide worthwhile employment and training opportunities for some of the young people who are joining America's work force for the first time.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LANGLEY RESEARCH CENTER
LANGLEY STATION
HAMPTON, VIRGINIA 23365

Phone: 703 722-7961, Ext. 4866

LANGLEY ASSIGNED ADDITIONAL JOBS UNDER YOUTH OPPORTUNITY CAMPAIGN

FOR RELEASE: IMMEDIATE

Hampton, Virginia -- National Aeronautics and Space Administration
Headquarters has authorized the Langley Research Center to hire 25 additional young people for temporary summer employment under President
Johnson's Youth Opportunity Campaign, Dr. Floyd L. Thompson, Director,
announced today.

The additional positions will bring to 60 the number of young people from the Virginia Peninsula area who will work with the Langley staff during the summer months. The Center's original allotment of 35 positions has been filled and recruiting for the new jobs will begin immediately.

Young people selected under the original allotment of positions include 16 young women and 19 young men from Hampton, Newport News, Poquoson and the York County area. They are earning \$1.25 per hour for the performance of clerical duties.

Eleven are assigned to each of the following elements of the Langley Research Center organization: Procurement Division; Fiscal Division; and Administrative Services Division. Two are working in the Personnel Division.

Nearly all of the 35 young people have plans to attend college in the autumn and the temporary employment offered by the Youth Opportunity Campaign will assist them to meet some of their anticipated expenses.

One of the temporary employes plans to enroll in a technical school and another expects to enter an apprentice training program.

The National Aeronautics and Space Administration, an Equal Opportunity Employer, has now been allocated a total of 500 special positions under the Youth Opportunity Campaign. The 60 positions assigned to Langley are in addition to the normal summer employment and college intern programs in which NASA has participated during the past several years.

Youth Opportunity employes are assigned to meaningful and worthwhile tasks which are beneficial to NASA and to the government and which should increase the young peoples' interest in the space program.



RELEASE NO: 65-252

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

TELS. WO 2-4155 WO 3-6925

FOR RELEASE:

IMMEDIATE
July 30, 1965

Also Released at Langley

NASA ACCEPTS EXPERIMENTAL

LIFE SUPPORT SYSTEM

FOR LANGLEY CENTER

An experimental life support system, enclosed in a simulated space cabin, intended for laboratory research has been accepted by the National Aeronautics and Space Administration and placed aboard ship for delivery to the Langley Research Center, Hampton, Va.

The fully operating prototype system, designed and constructed by the Convair Division of General Dynamics Corp., San Diego, Calif., completed its final operating demonstration this week, culminating two years of design, development and construction effort.

NASA research on the technology of advanced life support systems is a program of the NASA Headquarters directorate of Biotechnology and Human Research of the Office of Advanced Research and Technology.

The system is contained in a steel pressure shell 18 feet in diameter and 18 feet high.

7/30/65

The shell holds all the equipment necessary to supply an inhabitable environment for a crew of four experimenters for one year, with a 90-day resupply of food and expendable items.

Although never intended for use in space, all of its mechanisms and instruments are designed to function in the weightless environment of space as well as under Earth gravity conditions.

NASA scientists and engineers plan to use the device as a laboratory tool in a program of systematic research to enlarge the present scope of life support technology. Before extended space missions with multiple crews are attempted, numerous advances in life support techniques must be achieved, and the design and construction of the system itself contributed importantly to that end.

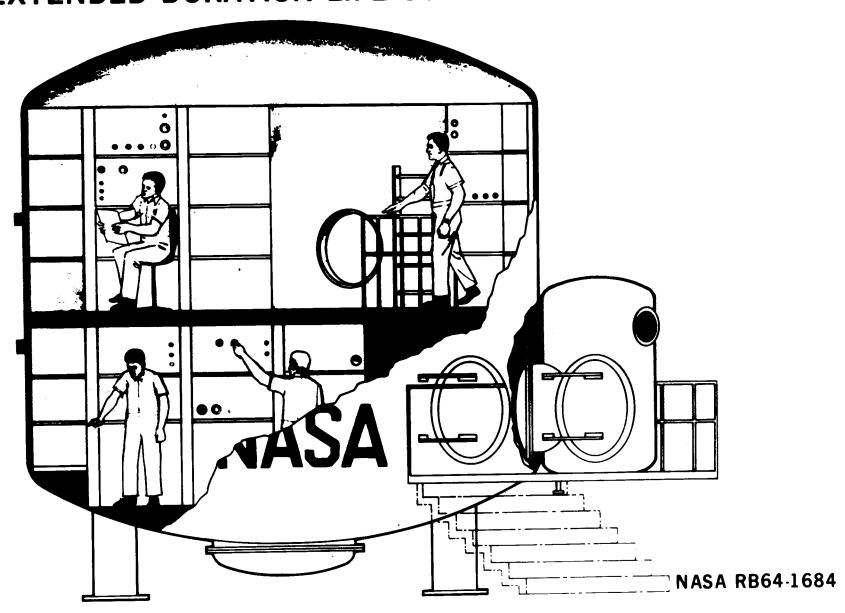
within the device are numerous subsystems to: (1) Extract oxygen from the carbon dioxide exhaled by the occupants so that it can be breathed repeatedly; (2) Convert waste liquids and humidity condensates to drinking water entirely safe for human use; (3) Provide control of internal temperature and humidity; (4) Allow storage and handling of freezedried food supply for four test subjects for 90 days at a time; (5) Remove from the cabin atmosphere all contaminating vapors which may be generated during operation of the device; and (6) Provide personal hygiene facilities for the occupants.

The NASA life support system contract was monitored throughout by personnel of the Langley Research Center, and a five-man team of Langley scientists and engineers witnessed the manufacturer's final operating demonstrations in San Diego and accepted the system for NASA.

The system is aboard the SS Magnolia State and left San Diego Friday for the East Coast States via the Panama Canal. Delivery at Langley is expected about Aug. 12.

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EXTENDED DURATION LIFE SUPPORT TEST CHAMBER





NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D.C. 20546

TELS. WO 3-6925

FOR RELEASE: THURSDAY PM'S October 14, 1965

RELEASE NO: 65-326

Also released at Hampton, Virginia

NASA LANGLEY SELECTS

CONTRACTORS FOR TWO-GAS

SENSOR SYSTEM STUDIES

The National Aeronautics and Space Administration will negotiate with two companies for contracts for design studies of an instrument capable of analyzing and controlling a two-gas atmosphere system for future manned spacecraft.

The two companies are Consolidated Systems Corp., Pomona, Calif., and Perkin-Elmer Corp., Electro Optics Division, Norwalk, Conn. Each contract is valued at about \$60,000.

Contracts will be negotiated and monitored by the NASA Langley Research Center, Hampton, Va., under the programs of NASA's Biotechnology and Human Research Division, Office of Advanced Research and Technology.

Manned spacecraft flown to date have used a single gas system -- oxygen -- for their crews. Longer missions lasting 45 days or more may require a two-gas system composed of oxygen and another gas (such as nitrogen, helium or other inert gas) to assure the health and safety of crew members.

10/13/65

Mechanical devices for storing and mixing oxygen and nitrogen into a two-gas atmosphere now exist, but there is no instrument which can accurately measure the gasses and provide atmosphere control information under flight conditions.

The two companies will undertake a four-month study of existing sensors for measuring the partial pressures of oxygen, water vapor and other gases which are present in a two-gas spacecraft cabin. The instrument must be capable of operating for periods up to 120 days.

At the conclusion of the studies, NASA will make a comparative evaluation of the concepts. The agency may then award a second phase contract which would lead to construction of one or more prototype atmosphere sensor systems.

Langley Research Center is managing the studies as part of its responsibility for developing technology which will be needed for future missions in space which the United States may wish to undertake.

27/965

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION HAMPTON, VIRGINIA 23365

HAMPTON, VIRGINIA 23365 Phone: 703 722-7961, Ext. 4866

NASA AWARDS WILL BE PRESENTED AT LANGLEY CEREMONY THURSDAY

FOR RELEASE:

Hampton, Virginia -- An annual ceremony for the presentation of awards to the staff of the Langley Research Center of the National Aeronautics and Space Administration will be held at 1:30 p.m., Thursday, (October 28), on the grounds adjacent to Langley's Activities Building.

A total of 199 persons will be honored, including 187 who will be presented NASA service emblems and certificates and 12 who are slated to receive cash awards totalling \$9,900 for patents granted by the United States Government in connection with their inventions on the job.

Dr. Floyd L. Thompson, Langley Director, will present a Group Achievement Award to Mr. Eugene Schult, Head of the Scout Project Office, to recognize the group's efforts in achieving the outstanding Scout vehicle flight success record during the past eighteen months.

T. Melvin Butler, Assistant Director for Administration, will preside at the ceremony.

Charles J. Donlan, Associate Director of Langley, will present NASA service emblems to 40 and 30 year recipients. 40 year NASA service emblems will go to Mrs. Lucy W. Bainbridge, Head of the Stenographic and Report Typing Section, and Miss Ruth T. Belle, both members of the Administrative Services Division. Recipients of 30 year NASA service emblems will be Mrs. Anita D. Bivins, a member of the Dynamic Loads Division; Joe Bosta, Jr., a member of the Plant Maintenance

Division; Hovis G. Carter, a member of the Mechanical Service Division; Blake W. Corson, Jr., Head, 16-Foot Transonic Tunnels Branch, Full Scale Research Division; Ray H. Wright, Head of Full Scale Analysis Branch, Full Scale Research Division; Thomas R. Turner, Full Scale Research Division; John L. Hudson, Sr., Assistant Chief of Research Models and Facilities Division; Thomas R. McGrath, Office of Engineering and Technical Services; Anshal I. Neihouse, Office of the Director; Robert A. Perkins, Flight Mechanics and Technology Division; Norman R. Richardson, Flight Reentry Programs Office; Charles C. Shufflebarger, Technology Utilization Officer; and James C. Tingle, Head, Employee Services Branch, Personnel Division.

Earl D. Hilburn, Deputy Associate Administrator of NASA will present Inventions and Contributions Awards to 12 employees.

Largest monetary patent award of \$1,500 will go to Charles B. King, Mechanical Services Division, for a bonding procedure to obtain a void-free controlled bond line gap between a plastic sleeve and a metallic liner and for forcing adhesive into the gap to bond the two components.

Roy F. Brissenden and Authur W. Vogeley, Head of the Guidance and Control Branch, both of Space Mechanics Division, will share \$2,300 for a cable arrangement for rigid tethering. The Division, headed by William H. Phillips, was honored in last year's awards ceremony with a Presidential Citation for this application.

Other awards will be presented to Howard B. Miller, Mechanical Service Division, \$1,100 for an electrical connector used to join two thermocouple leads; Weymouth B. Crumpler, Research Models and Facilities Division, \$1,000 for a multilegged support system that serves as a mounting device between a wind tunnel model and a balance frame.

Anthony Fontana, Applied Materials and Physics Division, \$1,000 for a solar sensor that accomplishes all of the phases of solar orientation, sun detection, gross sun orientation, and fine pointing; Paul F. Fuhrmeister, Chief of the Analysis and Computation Division, and Milner H. Eskew, Jr., Assistant Head of the Data Systems Branch of the same division, will share \$1,000 for a random function tracer, a device which follows lines on contour maps and converts the tracings into digital coordinates.

William D. Harvey, Aero-Physics Division, and Howard B. Miller, Mechanical Services Division, will share \$1,000 for a heat sensing instrument for detecting infinitesimal amounts of heat flowing onto a surface and is used for heat transfer measurements in the Hot Shot Tunnel; Emmett Bryant, Head, Structural Mechanics Instrumentation Section, Instrument Research Division, and Eugene C. Naumann, Dynamic Loads Division, \$500 each for a fatigue testing device that applies ramdom load levels to a test specimen based upon the concept of converting load histories stored in digital form to electrical reference signals whose value may be predetermined.

Division Chiefs will present service emblems to 187 staff members who have completed 20 years of Government service.

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HAMPTON, VIRGINIA 23365 Phone: 703 722-7961, Ext. 4866

FIVE SCIENTISTS RECEIVE AWARDS IN NASA LANGLEY HONORS PROGRAM

FOR RELEASE: IMMEDIATE

Hampton, Virginia - Five scientists of the National Aeronautics and Space Administration's Langley Research Center have been presented special service awards given by the Center for contributions to the advancement of the nation's aerospace programs.

Dr. Floyd L. Thompson, Langley Director, today announced the recipients as Herbert A. Wilson Jr., David G. Stone, and Eugene D. Schult for outstanding leadership; Eugene S. Love for exceptional scientific achievement; and Blake W. Corson Jr. for exceptional service.

In addition to individual certificates citing their contributions to the progress of flight, the Langley awards include checks of \$1,000 each for Wilson, Stone, Schult, and Love, and \$500 for Corson.

Wilson, Chief of the Applied Materials and Physics Division and a Langley scientist since 1937, and Stone, Head of the Flight Reentry Projects Office and a veteran of more than 24 years at Langley, were recognized for their "outstanding contributions in skillful and effective management of the Fire Project."

There were two successful Fire launches from Cape Kennedy, Florida, on reentry trajectories to make pioneering studies of the problems a spacecraft would encounter in returning to the earth's atmosphere from a lunar mission—— at speeds of about 25,000 miles an hour.

The first flight was April 14, 1964, at which time Wilson was head of the Flight Reentry Programs Office, with Stone as Assistant Head. Wilson was appointed to his present position two months later, and Stone was head of the office during the second flight of a Fire spacecraft May 22, 1965. All objectives in the Fire program were attained as planned, according to the citation honoring Wilson and Stone.

Schult, who came to Langley in 1949, was honored for his outstanding service as manager for the Scout launch vehicle project. Schult was project manager from June 1963 to last December, when he was named head of the newly-established Space Vehicle Design Criteria Office. The award cited Schult for contributing "significantly to improvement of the reliability of Scout...and to the success of the nation's space program and the NASA international program." The Scout, which has recorded 14 successful flights in succession, is now managed by Roland D. English, former assistant head of the office.

Love, Assistant Chief of the Aero-Physics Division, was cited for "out-standing achievements in the field of reentry science and technology and for providing valuable technical counsel to the Langley reentry sciences program." Love started his career at Langley in 1947 and is internationally recognized as an authority in the fields of hypersonic aerodynamics and reentry.

Corson, who has been at Langley since 1935, is Head of the 16-Foot Transonic Tunnels Branch of the Full Scale Research Division. His award was "for development of techniques for the experimental study of jet nozzles and the planning and direction of jet nozzle research programs which have had a highly significant influence on the development of modern jet aircraft."

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(February 9, 1966)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION HAMPTON, VIRGINIA 23365

Phone: 703 722-7961, Ext. 4866

LANGLEY RESEARCH CENTER MAKING NASA AWARDS AT 16 STUDENT SCIENCE FAIRS IN FOUR STATES FOR RELEASE: IMMEDIATE

Hampton, Virginia -- Langley Research Center is presenting awards this spring in 16 regional and state science fairs in Virginia, North Carolina, South Carolina and Kentucky as part of the annual participation of the National Aeronautics and Space Administration in the National Science Fair-International.

Up to five certificates of outstanding achievement in aeronautics and space related categories are being awarded by NASA in the participating science fairs, including five regional competitions in Virginia -- to be held at Yorktown, Arlington, Fairfax, Roanoke and Hopewell.

NASA awards are being presented by Langley at science fairs at Charlotte and Raleigh, North Carolina; Columbia, Florence, Orangeburg, Spartanburg and Greenville, South Carolina; and Morehead, Williamsburg, Jeffersontown and Lexington, Kentucky. Other NASA centers will take part in regional fairs in their areas.

Langley scientists will serve as judges in the Tidewater Science Congress on March 26 at York High School, Yorktown. Four of them -- John P. Mugler, Jr., Applied Materials and Physics Division; E. Brian Pritchard, Aero-Physics Division; George W. Jones, Jr., and Thomas J. Foughner, Jr., both of the Dynamic Loads Division -- will represent Langley in the selection of NASA award winners and also will be representing the Hampton Roads Section of the American Institute of Aeronautics and Astronautics as a part of the AIAA's educational activities on the Peninsula.

Don D. Davis, Jr., Head of the High Temperature Materials Branch of the Applied Materials and Physics Division, will be a Langley judge in the NASA competition on March 26 at the South Piedmont District Science Fair at Charlotte, North Carolina.

Another Langley scientist, a member of the staff of the Dynamic Loads

Division, Dr. E. Carson Yates, will judge the competition at the North Carolina

State Science Fair at Raleigh, North Carolina, on April 1 and 2.

The 1966 National Science Fair-International will be held in Dallas,

Texas, on May 11-14, where winners of regional and state science fairs in the

United States and Canada will compete for international honors. Axel T.

Mattson, Langley's research specialist for manned spacecraft projects, has

been named for the fourth successive year as a judge for the NASA awards program at the NSF-1.

NASA awards at Dallas will include certificates of merit to six student winners in aerospace categories. The prizes will be invitations to them to visit a NASA research center selected on the basis of the interests of the individual winners. Each student will be permitted to select a teacher to accompany him on the NASA tour, which will include visits to center research facilities and an opportunity to consult with scientists engaged in aerospace activities.

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March 18, 1966



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D.C. 20546

TELS. WO 2-4155 WO 3-6925

FOR RELEASE: IMMEDIATE

MAY 4, 1966

RELEASE NO: 66-102

NASA TO NEGOTIATE
WITH CONTROL DATA,
IBM FOR COMPUTERS

Control Data Corp. and International Business Machines Corp. have been selected by the National Aeronautics and Space Administration for competitive negotiations leading to a contract to furnish a large-scale digital computer complex for the NASA Langley Research Center, Hampton, Va.

Value of the computers and associated equipment in the overall complex to be purchased is expected to exceed \$15 mil-lion.

The computer complex will increase Langley's capability and effectiveness in the conduct of advanced research. It calls for using the computers with a wide variety of simulators to provide the technology required for the success of important national programs in aeronautics and space.

This includes such Langley research simulators as those used for rendezvous and docking in Earth and lunar orbit, landing on the Moon, and problems of air traffic control associated with future supersonic commercial transports now being designed.

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The procurement, based on a study of Langley computer requirements for the next six years, will provide for the orderly replacement of most existing electronic computers at the center.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION HAMPTON, VIRGINIA 23365

Phone: 703 722-7961, Ext. 4866

DEAR NASA: 'I AM WORKING ON A SPACE PROJECT.....'

Hampton, Virginia -- Mark, an enterprising nine-year-old student of Lexington, Kentucky, is one of about 18,000 persons who have written to the Langley Research Center during the past year in search of general information on aeronautics and space.

Mark's letter is a little different from the usual request. He is working on a space project and wants a small nose cone and a rocket engine capable of sending a two-pound payload about 30 feet in the air.

The National Aeronautics and Space Administration has been assured by Mark that he is willing to pay up to \$18, but he insists that the package be shipped to him with a notice printed in large letters on the outside:

"Mother, do not open."

NASA does not have nose cones and rocket engines for sale, but hopes that Mark (and his mother, too) will enjoy reading the educational publications on aeronautics and space sent him by Langley's office of public affairs.

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June 23, 1966



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D.C. 20546

TELS. WO 2-4155

FOR RELEASE:

IMMEDIATE

June 15, 1966

RELEASE NO: 66-152

CONTROL DATA CORP.

AWARDED LANGLEY

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COMPUTER CONTRACT

The National Aeronautics and Space Administration has selected Control Data Corp., Minneapolis, to furnish a large-scale computer complex for NASA's Langley Research Center, Hampton, Va., under a fixed-price contract. The award followed competitive negotiations.

The computers and associated equipment in the overall complex to be acquired from CDC are expected to cost approximately \$20-million.

The computer complex will increase Langley's capability and effectiveness in the conduct of advanced research. The computers will be used with a wide variety of simulators to provide the technology required for the success of important national programs in aeronautics and space.

This includes such Langley research simulators as those used for rendezvous and docking in Earth and lunar orbit, landing on the Moon, and problems of control associated with future supersonic commercial transports now being designed.

The procurement, based on a study of Langley computer requirements for the next six years, will provide for the orderly replacement of most existing electronic computers at the center.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D.C. 20546

WO 2-4155 TELS. WO 3-6925

FOR RELEASE: MONDAY A.M.

October 10, 1966

66-264 RELEASE NO:

NASA CONTRACT

SPEEDS WORK

IN CRITERIA



A program established by the National Aeronautics and Space Administration to alert the designers of space vehicles and components to possible pitfalls has been accelerated with the award of a contract to Douglas Aircraft Co., Santa Monica, Cal.

Major goal of the Design Criteria Program is to acquaint contractors and program managers with recommended designproblem solutions that have evolved from experience, and advancing technology in the national space effort. The program is concentrated in environmental conditions, structures, chemical rocket propulsion, and stability, guidance and control systems.

The Douglas contract, amounting to \$145,204 for the first year was awarded by NASA's Langley Research Center, Hampton, The work includes management services and facilities related to the design criteria program for space vehicle structures. The total contract is estimated at \$500,000 a year.

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Design criteria information is published in monograph form after the best experts available to NASA have defined the problem areas and determined what is needed to describe them. They are as concise as possible to encourage maximum use.

The monographs include a brief introduction, a terse report on the state of the art (the status of engineering and technical knowledge and capability), detailed statement of desired criteria (shapes, procedures, environmental models, guidelines, etc., that define limiting conditions for which space vehicles should be designed), recommended practices and references.

Improved flight-worthiness of complete space vehicle systems and economies in future flight programs are expected to result from the design criteria program. The program is directed by Richard V. Rhode, Assistant Director, Space Vehicles, Office of Advanced Research and Technology.

The monographs are issued by the Scientific and Technical Facility, Attn. NASA Representative, P. O. Box 5700, Bethesda, Md. 20014.

The Langley Research Center has been designated the lead center for structures design criteria. Lead source of stability, guidance and control design criteria is the Electronics Research Center, Cambridge, Mass.

The Lewis Research Center, Cleveland, is responsible for chemical rocket propulsion. The lead center for environment remains to be selected.

Langley has implemented the structures phase by establishing a Design Criteria Office under Eugene D. Shult, a steering committee and a prime contractor, Douglas. The contractor will be responsible for obtaining aerospace industry and university resources required and will support the planning, coordination, technical consultations, authorship and review of the monographs.

Chief of the Lewis Design Criteria Office is Howard W.

Douglass, Assistant Chief of the Lewis Chemical Rocket Division.

Liquid and solid propulsion will be treated separately. Some monographs will be prepared entirely by NASA personnel, others by separate contractors.

The Electronics Research Center has contracted with TRW Systems, Los Angeles, to identify problems and prepare monographs in selected areas. Head of the ERC Design Criteria Office is Francis J. Carroll Jr.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER LANGLEY STATION HAMPTON, VIRGINIA 23365

Phone: 703 722-7961, Ext. 4866

APPRENTICE GRADUATION OCTOBER 28 AT NASA LANGLEY RESEARCH CENTER

FOR RELEASE: IMMEDIATE

Hampton, Virginia -- John D. Young, Assistant to the Director, Bureau of the Budget, Washington, D. C., will be the principal speaker at the 24th annual graduation ceremony of the NASA Apprentice School at 1:30 p.m., Friday, October 28, at the Langley Research Center.

Dr. Floyd L. Thompson, Director of the Langley Research Center, will introduce Young and preside at the ceremony to be conducted at the NASA Activities Building in the West Area.

The Reverend Jesse King, pastor of the Liberty Baptist Church, Hampton, will give the invocation.

Mark C. Harvey, who will receive a journeyman completion certificate as experimental electronics mechanic, was elected by the graduates to represent them as the class speaker.

Musical selections will be provided by the Tactical Air Command Band conducted by CWO Julius Sanger, band director.

The NASA Apprentice School was established at Langley in December 1941, and the first class was graduated in February 1943. This year's 87 graduates will bring to 729 the number of journeymen to receive completion certificates in the school's 25-year history. The graduation class has representatives from 15 states and the District of Columbia, Ireland, Germany, and Canada.

Journeyman completion certificates are awarded jointly by the NASA and the Bureau of Apprenticeship of the U. S. Department of Labor. The certificates will be presented by S. Walter Hixon, Jr., Supervisory Employee Development Officer at the Langley Research Center. The Apprentice Training Program is under the direction of the Training Branch, and Frank Penland is the Apprentice Administrator.

The graduates will receive four-year completion certificates as follows:

Aero-Space Materials Processors: William E. Anspach and Philip H. Glaude.

Dynamic Modelmaker: Robert C. Evans.

Electricians: G. Clark Collie, Jr., Charles G. Evans, George A. Greene, Billy G. Holliday, Richard G. Lyeth, Alvah S. Moore, Jr., Patrick H. Seabolt, William S. Small, Raymond T. Sparrer, Jerry W. Wright, and Edwin W. Zellers.

Engineering Draftsmen: Charles E. Cockrell, James L. Puffenberger, Ralph R. Stoddard, and Davis B. Wright, Jr.

Experimental Electronics Mechanics: John B. Callis, C. Gerald Clendenin, John C. Covington, David C. Davis, Wayne D. Goff, Mark C. Harvey, Robert F. Hill, Morriss L. Holliday, Edgar W. Mangum, Jr., Garland F. Prillaman, Manfred P. Pross, S. Eugene Sutton, and Robert J. Swaim.

Experimental Facilities Mechanics: Earl H. Arrowood, Robert N. Barnes, Ramon P. Barr, Horace E. C. Bellamy, Harry L. Bloxom, David R. Brooks, Lewis G. Burney, Mercer D. Burt, Tucker A. Clark, Jr., Earl P. Conkling, John H. Crosby III, Harvey D. Dameron, Edward C. Durham, David C. Duxbury, Robert M. Ely, G. Gary Farnsworth, John Fryer, Jr., Thomas H. Hall, Jr.,

Charles D. Hubbard, John E. Hubbard, Carlton D. King, Roman K. Lupton,
David R. Mason, Jr., Frankie B. McLaughlin, Judson D. Moore, Lloyd W.
Nelson, Ted W. Noland, Kemp L. Parrish, James E. Pierce, Aubrey G. Price,
Howard E. Price, Robert F. Schwartz, James D. Smith, Thomas L. Smith,
Robert A. Smock, Harry B. Topping, Jr., James R. Tyeryar, Gene A. Wagner,
Willis H. Ward, Jr., Burnie S. Williams, Darrell A. Wood, and Edgar J.
Yarrington.

Experimental Machinists: Gary R. Beasley, Robert S. Davis, William T. Davis, Louis H. Griffin, Mack G. Lawrence, Gerry L. Maynor, Luther L. Richardson, James R. Smith, Jr., Carl R. Snodgrass, Harold V. Stanley, W. Roy Tate, and John D. Thompson.

Experimental Metal Workers: William R. Hood and William H. Irby, Jr.

Prior to joining the Bureau of the Budget last June as Assistant to the Director, Young was NASA Assistant Administrator for Administration. He served as an official in NASA Headquarters in Washington for six years in the field of administration.

Young was with McKinsey and Company, Management Consultants, from 1954 to 1960. During this period he served as an Associate, Senior Consultant, and Principal in the firm.

the Bureau of the Budget in 1946 as a Budget Examiner. From 1951 to 1953, Young was Executive Secretary of the Office of Defense Mobilization; from 1953 to 1954 he was that agency's Executive Officer. During this period he also served as one of three staff members to the President's Committee on Government Organization.

A writer and teacher in the field of public administration, Young was a 1954 winner of the William A. Jump Memorial Award for outstanding federal service. He is a member of the American Association for the Advancement of Science, the American Political Science Association, and the American Society for Public Administration. He was President of the Washington, D. C., chapter of this Society in 1958.

Mr. Young, his wife and two children live at 3028 Cedarwood Lane, Falls Church, Virginia.

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October 26, 1966



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER

LANGLEY STATION
HAMPTON, VIRGINIA 23365

IN REPLY REFER TO:

ROCKET-PROPELLED SIMULATED METEOR REENTERS ATMOSPHERE AT 38,000 MPH

FOR RELEASE: IMMEDIATE

Hampton, Virginia -- A small manmade iron pellet has been propelled from a high-flying ground-launched rocket into the Earth's atmosphere at a speed of more than 38,000 miles an hour.

The experiment conducted by the National Aeronautics and Space

Administration's Langley Research Center, Hampton, Virginia, resulted in
the creation of an artificial meteor of unprecedented velocity.

The one-gram pellet, about the size of a dime, was gun-fired from a shaped-charge accelerator--the final stage of a six-stage Trailblazer II rocket--on the downward leg of its ballistic trajectory in a flight from the NASA Wallops Station, Wallops Island, Virginia.

Trailblazer II was launched as part of a continuing flight program conducted by Langley scientists to study the luminous and ionization characteristics of simulated meteors to increase their knowledge of the mass, density, and composition of natural meteoroids.

Meteoroids are bits of matter that travel at high speed in space.

When they enter the Earth's atmosphere, they flare and leave bright trails of light called meteors—or falling stars.

The pellet gave the appearance of a small flaming meteor as it reentered the atmosphere at a predetermined location--about 40 miles above

LANGLEY RESEARCH CENTER
FIFTY YEARS OF SERVICE TO THE NATION
1917 - 1967

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the Atlantic Ocean and approximately 125 miles downrange from Wallops.

It was tracked by three camera and five radar stations along the east coast, south of Wallops.

Analysis of the scientific photography and radar tracking data from the experiment which was launched from Wallops at 12:52 a.m. February 14 revealed the pellet traveled approximately 56,000 feet per second--38,180 miles an hour--according to two Langley scientists, Andrew R. Wineman, Project Manager, and Clarence A. Brown Jr., Assistant Project Manager, of the NASA Meteor Simulation Project.

The Trailblazer II includes a Castor, with two Recruit rocket motors, as the first stage; TX77, second stage; X248, third stage; Cygnus 15-inch spherical rocket, fourth stage; Cygnus five-inch spherical rocket, fifth stage; and the shaped-charge accelerator, sixth stage.

The first two stages launched the vehicle to an altitude of about 190 miles. After a coasting period, the vehicle was propelled earthward by the next three stages firing in rapid succession to permit the shaped-charged sixth stage to gun-fire the research pellet into the atmosphere about six minutes after launch.

Scientists observed the artificial meteor for about two seconds before it was consumed by the friction heat of reentry.

The Meteor Simulation Project is a cooperative effort between Langley and the Smithsonian Astrophysical Observatory, Cambridge, Mass., under the cognizance of the NASA Office of Advanced Research and Technology, Wash., D. C.

February 27, 1967

Phone: 703 722-7961, Ext. 4866





NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LANGLEY RESEARCH CENTER

LANGLEY STATION
HAMPTON, VIRGINIA 23365

IN REPLY REFER TO:

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NEW FATIGUE LABORATORY FOCAL POINT OF RESEARCH TO INCREASE SAFETY, ECONOMY OF FLIGHT VEHICLES

FOR RELEASE: IMMEDIATE

Hampton, Virginia - A new science laboratory to greatly extend the capability and capacity of the National Aeronautics and Space Administration to investigate the problems of fatigue in aircraft structures and space vehicles is being placed in operation at the NASA Langley Research Center, Hampton, Virginia.

Langley, the principal NASA center concerned with pioneering research in aerospace structures and materials, has been studying the fatigue problem both in the laboratory and in flight for the past several years to provide new technology aimed at increasing flight safety and economy of operations.

Fatigue is a mechanism by which materials fail due to the application of many cycles of load— any one of which usually causes no measurable damage.

It is responsible for much of the cost of maintaining civil and military aircraft, and can become a threat to safety, if undetected.

As one example of the subtle process known as fatigue of metals, NASA scientists explain that each time the wings of an airplane deflect due to flight loads or gusts, very minute amounts of metal throughout the structure get a little more tired. When the structure becomes overtired, it begins to crack.

LANGLEY RESEARCH CENTER FIFTY YEARS OF SERVICE TO THE NATION 1917-1967

The new laboratory, staffed by a group of experts who have published over 100 technical documents on the subject during the past several years, will be utilized in a continuing full-scale attack to scientifically determine the when, where, and why of the phenomenon of structural fatigue.

The \$1.3 million Fatigue Laboratory is a 30-foot high steel-framed building providing 100 by 200 feet of floor area. The laboratory section includes 5,000 square feet of heavy duty floor made of four-foot-thick reinforced concrete. There is a two-story brick office portion 98 by 40 feet.

The laboratory, located in the heart of Langley's West Area, houses a large variety of research apparatus ranging from breadbox size plate-bending fatigue machines to 20-foot-high, million-pound tensile machines. Fifty testing devices will be used in the laboratory to simulate loads, temperatures and other environmental conditions encountered by the materials in the structures of aircraft and space vehicles.

Some of the devices can apply a complex history of loading to a specimen at rates up to 400 cycles per second. Others are capable of loads up to 1,000,000 pounds at high speeds.

Temperatures up to 3,000 degrees F. are used to simulate conditions that will be encountered in future hypersonic aircraft—those capable of flight in excess of five times the speed of sound.

Space environment is simulated in the laboratory through the use of vacuum chambers.

An outdoor test device evaluates the effects of environment on fatigue behavior of representative materials. The deterioration in fatigue strength

brought about by the natural elements is compared with artificially altered lives in the laboratory— thus forging a link between laboratory results and real life.

Since previous extensive research indicates that variations in atmospheric conditions in a laboratory can influence test results, most of the new facility is air conditioned to provide controlled temperature and humidity in areas where scientific investigations of specimens representing basic aerospace materials will be conducted.

Another portion of the building, not air conditioned, utilizes an existing 10,000,000-watt power supply for radiant heating equipment in tests of structural components at elevated temperatures.

Present design procedures force airplane and space vehicle designers to conduct many lengthy and costly fatigue tests of portions of a structure to discover potential fatigue problems. Even then, aircraft in service must be inspected regularly and thoroughly to insure the integrity of each unit.

Such inspections usually avert disaster, but sometimes lead to costly modifications on entire fleets of aircraft.

The staff of the Fatigue Laboratory is called upon frequently to advise other NASA centers, the Federal Aviation Agency, the Department of Defense, and other organizations on the solution to such fatigue problems, including those critical to the success of major national programs.

Typical among these is the current national effort to develop a supersonic transport-- a subject of basic research by Langley scientists and
engineers for the past decade.

Langley researchers have conducted thousands of tests to help demonstrate the feasibility of building an SST and to discover some of the problems that must be solved to make the aircraft safe and successful.

A current Langley project is devoted to the development of a method for reducing the time required to demonstrate the adequacy of the SST structure in fatigue.

Under present procedures, the aircraft should be tested on a schedule simulating loads and temperatures on a realistic time scale—taking into consideration such factors as 50,000 hours of flying time and allowing for variations in behavior and inevitable delays in test for breakdowns, inspections, and repairs.

With all the structures and materials problems posed by the SST, a realistic ground test would consume an estimated six to ten years. The Fatigue Laboratory staff will develop methods for reducing fatigue testing time to within satisfactory limits. A variety of techniques are seen for accomplishing this goal:

- 1. Identification of those elements in the SST environment which will not influence fatigue life and can safely be eliminated from the test schedule.
- 2. Substitution of many cycles of one type of load by a few cycles of another.
- Increase test temperature to speed up metallurgical changes in a controlled manner.

In other programs, efforts are under way at Langley to develop concepts which will help designers make structures that are tolerant to fatigue or accidental damage.

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June 15, 1967

NEWS



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (202) 962-4155 WASHINGTON, D.C. 20546 TELS: (202) 963-6925

FOR RELEASE: IMMEDIATE

September 23, 1970

RELEASE NO: 70-155

JACKSON TO HEAD OART

Mcks Depty Dipretor

Roy P. Jackson, Vice President and Assistant General
Manager of the Aircraft Division of the Northrop Corp., today
was appointed Associate Administrator for the National
Aeronautics and Space Administration's Office of Advanced
Research and Technology (OART), effective Nov. 2.

OART, one of four major Headquarters offices which direct NASA's research and development programs, has the responsibility for providing the technology to meet the nation's future requirements in aeronautics and space exploration. OART projects cover a broad range from aeronautical research to space power.

Four of NASA's field installations—Ames at Moffett Field, Calif; Langley at Hampton, Va.; Lewis at Cleveland; and Flight Research at Edwards, Calif.—carry out their programs in aeronautics and space under OART's leadership.

Two other appointments were announced by Dr. George M. Low, NASA Acting Administrator.

Oran W. Nicks, who has been the Acting Associate Administrator of OART, was appointed Deputy Director of the Langley Research Center, effective Nov. 2.

Vincent L. Johnson was named Deputy Associate Administrator for Space Science and Applications (OSSA), effective immediately.

Jackson, 50, was born in San Francisco and was graduated from Stanford University with distinction, receiving an AB degree in mechanical engineering with an aeronautical option.

While serving in the Navy during World War II, he was assigned as a section head in the 7' x 10' wind tunnel at Ames Research Center.

Jackson joined Northrop in 1953 and has directed a wide variety of aeronautical and space system efforts.

"NASA is very fortunate to obtain the services of a man with such a long and varied experience in aeronautical and space research and development," said Dr. Low. "He brings to NASA an enviable record of success as a manager," Dr. Low added.

Jackson is married and has two grown children.

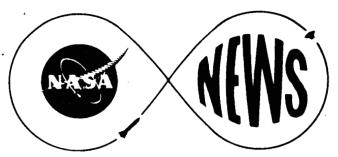
Nicks, 45, has been with NASA since 1960. He served as Director of Lunar and Planetary Programs and as Deputy Associate Administrator of OSSA and acting head of OART.

A native of Texas, Nicks worked on a number of aeronautical and space research and development projects at North American and Vought Astronautics Division of Chance-Vought Aircraft, Inc., before joining NASA.

Mr. and Mrs. Nicks and two of their three children live at 6411 Kenhowe Drive, Bethesda.

Johnson came to NASA from the Navy's Bureau of Weapons in 1960. He has served as program manager of Scout, Delta and Centaur class vehicles and Director of Launch Vehicle and Propulsion Programs before becoming Deputy Associate Administrator (Engineering).

Mr. and Mrs. Johnson live at 10241 Farnham Drive, Bethesda.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Washington, D. C. 20546

Ken Atchison

Headquarters, Washington, D.C.

(Phone: 202/755-3252

FOR RELEASE: December 28, 1973

Maurice Parker

Langley Research Center, Hampton, Va.

(Phone: 804/827-3966)

Charles Kelsey

Lewis Research Center, Cleveland, Ohio

(Phone: 216/433-6438)

RELEASE NO: 73-282

LANGLEY BUILDING HEATED, COOLED BY SOLAR ENERGY

The Sun's energy will soon heat and cool a new engineering building planned for NASA's Langley Research Center, Hampton,

The test program is designed to obtain realistic engineering and operating experience with a source of clean power
as an alternative to fossil fuels and other conventional
energy sources.

Planned for completion in mid-1975, the 53,000 squarefoot Systems Engineering Building could ultimately have most of its heat and cooling provided by solar collectors.

-more-

December 18, 1973

In discussing NASA's plans for the experimental solar collector installation at Langley, Dr. James C. Fletcher, NASA Administrator, said, "This building, as far as we know, will be the first building of its size in the world for which solar energy will provide a significant part of the building's heating and cooling load."

The announcement was made during Dr. Fletcher's recent testimony before the Subcommittee on Energy of the House Committee on Science and Astronautics.

"A 15,000 square-foot collector is planned, since this size will provide most of the heating requirements and some of the cooling requirements. It will also test energy storage capacity, to obtain feasibility data on all aspects of the system.

"As these data are analyzed and the state of the art advances, we will be able to expand the collector system to supply all the energy requirements for the building," Dr. Fletcher told the Subcommittee.

Water-filled tubes inside solar collectors would absorb the Sun's heat, using it for direct hot water heating and to operate an absorption refrigeration unit for cooling. For convenience in conducting the test program, solar units will be located on the ground beside the building. NASA's Lewis Research Center, Cleveland, is designing the experimental solar system and will select the candidate solar collector designs. Studies have shown solar collectors to be technically feasible and effective in converting sunlight into usable thermal energy. Based on these studies, NASA management decided to take the next step and evaluate the latest collector technology under realistic operating conditions.

As part of its program, Lewis will evaluate various types of solar collectors, testing them in a solar simulator producing typical sunshine conditions. The simulator can duplicate sunlight conditions ranging from a cloudy day in Cleveland to a cloudless one in Arizona. From these tests researchers will select several candidate collectors, to be evaluated under actual operating and weather conditions at the Langley site.

The solar simulator will allow standardized testing of collector panels developed under other programs, in NASA and other agencies. The NASA Marshall Space Flight Center, Huntsville, Ala., is performing demonstration tests with a collector promising excellent efficiency. The National Science Foundation plans to develop a number of units. Standardized testing will insure objective comparisons.

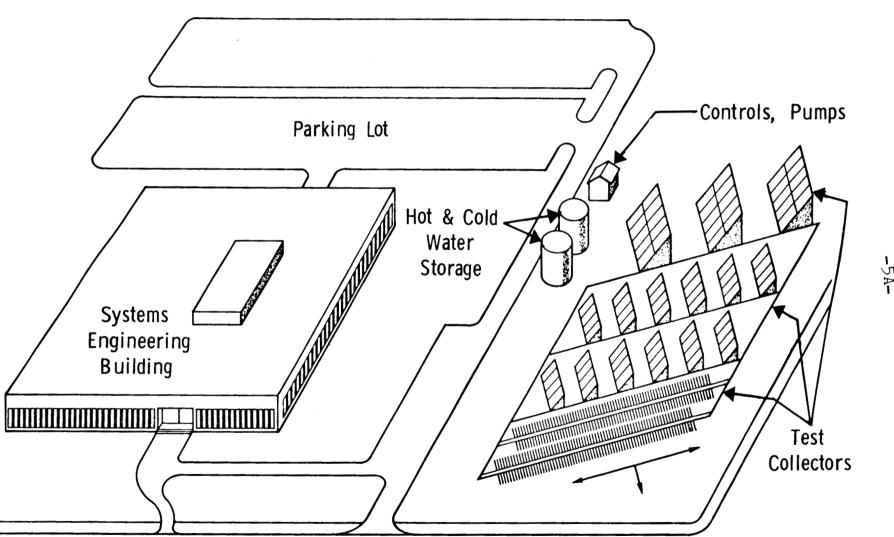
Calculations indicate that an additional 25,000 square feet of collector area would provide total heating and cooling for the Langley building. For this building, an estimated square foot of collector surface will be required to heat and cool a square foot of building space. This ratio may not hold for other types of buildings in other locations.

NASA believes the pacing component in the system is the solar collector and has established cost goals of \$1 to \$2 a square foot, anticipating a minimum 15-year life span.

A typical solar collector consists of a flat metal plate, insulated on the side not exposed to sunlight, and covered by glass plates or plastic sheets to retain heat. Radiation passes through the covers and is absorbed by the metal plate. Water flowing through channels in the plate absorbs the heat and is piped to heating or cooling systems in the building. Surfaces of the collector plates can be coated to enhance solar absorption and to reduce emissivity.

An advanced collector concept is a metal tube absorber mounted inside an evacuated glass cylinder. The vacuum reduces heat losses to a minimum, increasing efficiency. In its present design, it is about 8 to 10 feet long and 4 inches in diameter. Sunlight passes through the glass tube and is absorbed by the metal tube. Energy absorbed in such collectors is enough to heat water to more than 200 degrees Fahrenheit for use in heating and cooling systems.

SOLAR COLLECTOR TEST BED LANGLEY RESEARCH CENTER



The solar complex will be equipped with tanks to store hot or cold water for use during days when the Sun doesn't shine. Langley's central steam system will be available when solar energy is inadequate.

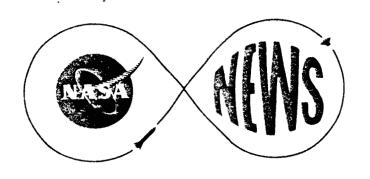
The NASA experiment should provide valuable data and experience and ultimately demonstrate how commercial and industrial buildings can be climate-controlled using solar energy.

Solar heating systems like the one planned for Langley should also be practical for private residences in the future. The NASA project at the Marshall center and an extensive National Science Foundation program are investigating these possibilities in considerable detail.

According to Dr. Fletcher, the planned Langley solar energy test bed will test two assumptions underlying current interest in solar energy:

- The use of solar energy for heating and cooling has great potential in an era of fuel shortages and environmental concern;
- o This potential will be realized only after practical solar energy heating and cooling systems can be made economically competitive with conventional systems.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Langley Research Center Hampton, Va. 23365

FOR RELEASE:

RELEASE NO. 75-7

March 21, 1975

NASA-LANGLEY DIRECTORS NAMED

HAMPTON, Va.--James E. Stitt and Richard R. Heldenfels have been named to directorships at NASA's Langley Research Center. The appointments were made today by Langley Director Edgar M. Cortright.

Stitt is the new Director for Electronics, and Heldenfels is

Director for Structures. Both men have been acting directors since

January.

Stitt's Electronics Directorate manages aeronautics and space research work in analysis and computations, flight dynamics and control systems, instrument research, flight instrumentation, and the Terminal Configured Vehicle Program.

Heldenfels' Structures Directorate manages research and development work in acoustics and noise reduction, materials, structures, loads, dynamics and aeroelasticity, and special programs in computer-aided design and composite structures for aircraft and space vehicles.

Stitt, 54, began his career at Langley in June 1947 after graduation from Georgia Institute of Technology with a bachelor's degree in electrical engineering.

He was Assistant Chief of Langley's Instrument Research Division from 1963 to 1965, and Assistant Chief of the Flight Instrumentation Division

from 1965 to 1970. He was Chief of that Division until January 1975, when he was named acting Director of Electronics.

Stitt received a NASA Special Achievement Award in 1971 for his work in the fields of instrumentation, communications and electronics.

In 1972 he received NASA's Exceptional Service Medal.

Stitt and his family live in the Queen's Lake section of Williamsburg.

Heldenfels, 54, began his Langley career in late 1947. He is a 1942

aeronautical engineering graduate of the Massachusetts Institute of

Technology.

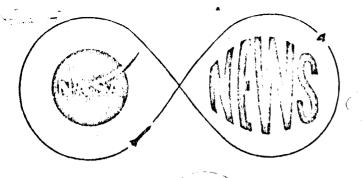
In 1952 he initiated design of a new high-temperature structures facility at Langley. After several positions in research concerned with structures for supersonic aircraft and missiles, he was appointed Chief of the Structures Research Division in 1956.

In late 1970 he was named Assistant Director for Structures, a position he held until January 1975, when he was named acting Director for Structures.

Heldenfels is an authority on structural analysis and testing, has written many technical publications, and has been a leader in the development of structures test facilities that simulate or duplicate the high-speed flight environment.

He received NASA's Exceptional Service Medal in 1969. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics, and a member of the Engineers' Club of the Virginia Peninsula.

Heldenfels and his family live on Crittenden Lane in Newport News. His son, R. D. Heldenfels, is a business reporter with the Daily Press.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Langley Research Center Hampton, Va. 23365

FOR RELEASE:

March 27, 1975

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RELEASE NO. 75-11

NEW NASA-LANGLEY MANAGER

HAMPTON, Va.--Robert E. Smylie has been named Director for Space at NASA's Langley Research Center. He will assume his new position in July, replacing Eugene S. Love, who has announced his retirement.

Smylie is now Deputy Associate Administrator (Space) for the Office of Aeronautics and Space Technology (OAST) in NASA Headquarters, Washington, D.C.

In his new position Smylie will direct Langley research and development work in space systems, space applications and technology, environmental quality programs, and the Scout launch vehicle.

Smylie has been in his present position since November 1973. Before that he was Chief of the Crew Systems Division at NASA's Johnson Space Center in Houston, Texas.

From 1962 to 1973 he worked in support of the Apollo Program,

particularly in the fields of environmental and thermal controls, portable

life support systems, bio-instrumentation, and water and waste management.

Before joining NASA in 1962, he worked for Douglas Aircraft Company at Santa Monica, Calif., where he was responsible for several flight systems during development of the DC-8 aircraft.

He graduated cum laude from Mississippi State University in 1952, and received a master's degree in mechanical engineering from the same university in 1954.

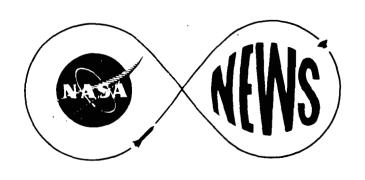
He was a Sloan Fellow at Massachusetts Institute of Technology in 1967, where he completed the requirements for a master's degree in business administration and public administration. He has also done graduate work at the University of California at Los Angeles.

He is a member of Tau Beta Pi, Pi Tau Sigma and Kappa Mu Epsilon, and he has received NASA's Exceptional Service Medal and several awards from the Johnson Center.

He was 1974 chairman of the Technical Committee for Life Sciences,
American Institute of Aeronautics and Astronautics, and served as general
conference chairman of the Joint Societies Conference on Environmental
Systems in 1973.

From 1970 to 1971 he served as a City Councilman in El Lago, Texas.

Smylie and his wife, June, have three children.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Langley Research Center Hampton, Va. 23365

FOR RELEASE:

75-16

May 22, 1975

LANGLEY SPACE DIRECTOR

HAMPTON, Va.--Paul F. Holloway has been named Director for Space at NASA's Langley Research Center, beginning May 26. The announcement is made by Langley Director Edgar M. Cortright.

In his new position, Holloway will be responsible for space and space-related research programs at Langley. These include space systems research, space applications and technology programs, the Scout launch vehicle, environmental quality programs, and environmental and space sciences research.

Holloway has been Chief of the Space Systems Division since August 1972. He joined the Langley staff in June 1960.

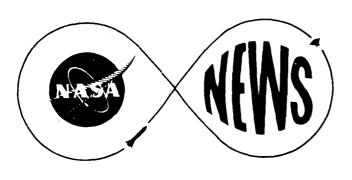
He was born June 7, 1938, in Poquoson, Virginia. He received a bachelor of science degree in aeronautical engineering from Virginia Polytechnic Institute and State University in 1960.

In his former position, Holloway was responsible for overall direction of Langley's support work on the Space Shuttle, including the Advanced Technology Laboratory, a possible Shuttle payload. He also headed work on advanced aerospace transportation systems studies and the primary NASA studies in planetary entry technology.

He is a recognized authority on entry flight mechanics and Earth orbital and planetary space missions. He has written numerous technical publications and has served on many space, Shuttle and space-related task groups and panels, including the joint NASA/DOD Space Transportation Systems Group.

He is a member of the American Institute of Aeronautics and Astronautics (AIAA) and is an associate editor of the AIAA Journal of Spacecraft and Rockets.

He and his wife, the former Barbara Jane Menetch, and their two sons live on Bunting Lane in Poquoson.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Langley Research Center Hampton, Va. 23365

FOR RELEASE:

July 11, 1975

RELEASE NO. 75-19

NEW DIRECTOR AT NASA LANGLEY

Hampton, Va.--Donald P. Hearth, Deputy Director of NASA's Goddard Space Flight Center, has been appointed Director of NASA's Langley Research Center, replacing Dr. Edgar M. Cortright, who has decided to leave the space agency to pursue other interests.

This appointment will be effective in early September, following the launches of two Viking spacecraft to Mars, a project being managed by Langley.

Hearth has been the Deputy Director at Goddard since 1970. In this capacity he has acted as general manager of the Center, providing dayto-day management of Center operations and serving as the principal official for the management of scientific and technical activities.

"We are very fortunate to have someone with Don Hearth's capabilities and experience to lead NASA's largest and first research center," said Dr. James C. Fletcher, NASA Administrator. "His past accomplishments within NASA have been outstanding. He will be a great asset to NASA Langley in directing, and planning and the conduct of programs in technology which are of major importance to the United States and NASA."

Of Cortright, Dr. Fletcher noted, "NASA will feel a great loss with the departure of Ed Cortright. He has made major contributions to the nation's aeronautics and space program for 30 years, while at two NASA Centers and at Headquarters in Washington. During the past seven years at Langley, Dr. Cortright has been the guiding factor for bringing the Viking mission from concept to launch. He has made major program redirections, including expansion of the aeronautics program and the entrance of Langley into pollution detection and monitoring from space, and has carried out a substantial facility modernization program at the Center."

Before accepting his position at Goddard in 1970, Hearth served as Director of Planetary Programs in NASA Headquarters' Office of Space Science and Applications. He was named to this position in 1967, after joining NASA in 1962 as Manager of Advanced Programs and Technology.

Before joining NASA, Hearth was manager of research on hypersonic propulsion and flight systems for five years at Marquardt Corporation, Van Nuys, Calif. He served as Project Manager and as Department Manager. Earlier he was an aeronautical research scientist at the Lewis Research Center in Cleveland, under the National Advisory Committee for Aeronautics, NASA's predecessor organization.

During the past year, Hearth has directed an agency-wide examination of opportunities for future space activities. Since early 1974, he has served as Chairman of NASA's Equal Opportunity Council, which is a senior agency-wide advisory group made up of all the NASA Deputy Center Directors and Equal Opportunity Officers.

Hearth received his Bachelor of Science degree in mechanical engineering from Northeastern University, Boston, in 1951. He has done graduate work in hypersonics and electronics and is currently pursuing an advanced degree in Public Administration. He is a graduate of the Federal Executive Institute. In 1969, Hearth was awarded NASA's Exceptional Service Medal. He is a member of theAmerican Institute of Aeronautics and Astronautics, the American Society for Public Administration (ASPA), and ASPA's Committee on Science and Technology in Government.

The Hearths and two of their four children live in Alexandria, Va.

Cortright became Director of the Langley Research Center in May

1968, after more than 20 years of research and development experience
in aeronautical and space activities.

Following receipt of a Master of Science degree in aeronautical engineering from Rensselaer Polytechnic Institute, Cortright, in 1948, joined the staff of what is now NASA's Lewis Research Center. For ten years, he conducted research at Lewis on the aerodynamics of high-speed air induction systems and jet exit nozzles.

In 1958 Cortright was selected to join a small task group to lay the groundwork for a national space agency. With NASA's creation that year, he became Chief of Advanced Technology in NASA Headquarters and directed the initial formulation of NASA's meteorological satellite program, including projects Tiros and Nimbus.

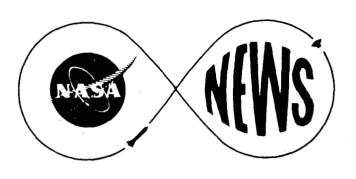
In 1960 he became Assistant Director for Lunar and Planetary

Programs, where he directed the planning and implementation of such

projects as Mariner, Ranger and Surveyor.

In November 1961 Cortright became Deputy Director, and later Deputy Associate Administrator, for Space Science and Applications. In this capacity, he served as general manager for all of NASA's programs for the automated (unmanned) exploration and utilization of space until 1967, when he became Deputy Associate Administrator for Manned Space Flight.

Cortright is the recipient of a number of awards from NASA and from both professional and civic organizations, including a Doctor of Science degree from George Washington University and a Doctor of Engineering degree from Rensselaer. He is a Fellow of the AIAA and the AAS, a member of the National Academy of Engineering, and is President-elect of the American Institute of Aeronautics and Astronautics.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Langley Research Center Hampton, Va. 23365

FOR RELEASE:

RELEASE NO. 75-23

UPON RECEIPT

NEWPORT NEWS NATIVE APPOINTED TO LRC MANAGEMENT POSITION

Hampton, Va.--Fred W. Bowen, Jr., currently Executive Assistant to NASA's Associate Administrator for Center Operations in NASA Head-quarters, has been named to the new position of Technical Manager for Management Operations at the Langley Research Center effective August 18. He will report to Edwin C. Kilgore, who is the Director for Management Operations.

Bowen has been in his present position in Washington, D.C. since March 1974, where he is the senior technical and management staff assistant for agency-wide institutional management of NASA's ten field centers throughout the country. From 1972 to 1974 he served as the executive and technical assistant to the Associate Administrator for Aeronautics and Space Technology.

After receiving his B.S. degree in physics from the College of

William and Mary in 1964, Bowen joined the Langley staff as a researcher
in the Plasma Physics Section. He later became a member of the Director's
Research Staff Office, and prior to transferring to NASA Headquarters
served for three years as Technical Assistant to the Viking Project Manager.

As Technical Manager for Management Operations, Bowen will have responsibility for Langley's programs in the areas of technology utilization

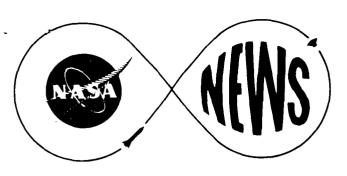
and application, scientific and technical information, occupational health services, and technical library activities. In addition, he will assist in the overall management of directorate operations and activities such as financial management, management support, personnel, business data systems, procurement, and programs and resources.

Bowen is a member of Sigma Pi Sigma National Physics Honor Society and the American Institute of Aeronautics and Astronautics.

He is a native of Newport News and graduated from Newport News High School.

Bowen and his wife, Alice, will make their home in York County.

August 7, 1975



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Langley Research Center Hampton, Va. 23365

FOR RELEASE:

August 15, 1975

RELEASE NO. 75-24

BOEING AWARDED COMPUTER SYSTEM CONTRACT

Hampton, Va. -- The Boeing Commercial Aircraft Company has been selected for negotiation of a contract to provide a Whole Word Flight Control Computer System for the NASA 515 Aircraft.

The Boeing Commercial Aircraft Company is located in Seattle, Washington. The project will be managed by NASA's Langley Research Center.

The cost-plus-fixed-fee contract to be negotiated will cover a period of about five years, with an option to expand this period to seven years. The contract is valued at approximately \$1,365,750 and work is scheduled to begin immediately.

Under this contract, Boeing, working in concert with its principal subcontractor, General Electric Company, will modify three existing GE-owned Whole Word Computer Systems to incorporate expanded memory and input/output capacity. They will develop the necessary software for system operation, make the system suitable for installation, install the system, train government personnel, and provide one year of operational support. General Electric Company will also deliver an additional Whole Word Flight Computer for the Government's retention.

The modifications will permit replacement of the present flight control computer system with a more powerful, expandable, and generally more versatile system. This will broaden the research capability of the

NASA 515 aircraft whose basic application is the study of terminal and near terminal traffic environmental conditions.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 76-40

November 22, 1976

VIKING OFFICIAL GOING TO NASA HEADQUARTERS

HAMPTON, Val. -A. Thomas Young, former Mission Director for the Langley Research Center's Viking Project, has been appointed Director for Lunar and Planetary Programs at NASA Headquarters in Washington, D.C.

He will begin his new job, within NASA's Office of Space Science,
December 6. He will be responsible for management of all unmanned
planetary programs, including Viking, Pioneer, Mariner, and Helios.
He will also manage studies in planetary astronomy, atmospheres, and
and geology, advanced science planning, advanced programming and technology, extraterrestrial materials research, and flight program support.

Young has worked with the Viking Project since 1968, when he helped develop Mars mission objectives, and he was Science Integration Manager for all Viking science investigations. Most recently he has been Mission Operations Manager and Mission Director for the 750-person Viking Flight Team, working at NASA's Jet Propulsion Laboratory in Pasadena, Calif.

Young was born in Nassawadox, on Virginia's Eastern Shore, in 1938. He received bachelor's degrees in aeronautical engineering and mechanical engineering from the University of Virginia in 1961.

He began his career at Langley in late 1961, working on the Vector Project. He became Mission Definition Manager of the Lunar Orbiter Project in 1965.

He was a Sloan Fellow at the Massachusetts Institute of Technology in 1971-72, where he earned a masters of management degree.

Young has received several NASA awards for his contributions to the Lunar Orbiter and Viking Projects. He was selected as one of five outstanding young leaders for 1975 by the Hampton Roads Junior Chamber of Commerce.

Young, his wife, page, and their two children live in Poquoson, Va.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release

December 2, 1976

NOTE TO EDITORS

On Wednesday, December 8, NASA's Langley Research Center will host its annual Senior Citizens Day. The event will be held in Building 1244 (Hangar), beginning at 10 a.m.

Approximately 500 senior citizens from the Peninsula are expected to attend.

The program will feature a talk entitled "Meals for the Elderly," by Gary Primeaux, Johnson Space Center.

Musical selections will be provided by the Tactical Air Command Band, Langley Air Force Base. The TAC combo will provide music for the Senior Citizens Dance Contest.

Karen E. Miller Public Information Specialist



Langley Research Center Hampton, Virginia 23665 AC 804 827 3966

For Release:

RELEASE NO. 76-42

3

DECEMBER 6, 1976

LANGLEY COLLOQUIUM SPEAKER TO DISCUSS ESP

Hampton, Va.--Dr. Persi Diaconis will speak about "ESP: Science, Sorcery or Skullduggery" at the NASA-Langley Research Center colloquium on December 13. The talk begins at 2:30 p.m. in the Langley Air Force Theatre.

Diaconis is Assistant Professor of Statistics at Stanford University. His background includes serving as a statistical consultant to the Jet Propulsion Laboratory and <u>Scientific American</u>. He is also a magician.

In his talk, Diaconis will address the problem of statistical inference and deception, using two psychics as examples. The Parascience community and small groups of "hard" scientists were convinced beyond reasonable doubt of the psychic abilities of Ted Serios and Billy Delmore. Serios consistently produced psychic images on borrowed film under "conditions which made fraud unthinkable." Delmore received a grant from Harvard University to explore the nature of his psychic ability. In both cases, investigation revealed fraud.

Members of the colloquium audience will be invited to participate in tricks showing how easy it is to be deceived.

N/5/News

National Aeronautics and Space Administration

Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-2

February 14, 1977

NASA TO SPONSOR CAREER DAY PROGRAM

Hampton, Va.--"Key to the Future: Engineering" is the theme of this year's observance of National Engineer's Week. In keeping with the theme, a Career Day program will be held at the Langley Research Center on Thursday, February 24. The program will begin at 9:45 a.m. with a keynote address by Langley Director Don Hearth. It will be held in Building 1220.

Approximately 500 Peninsula high school students will participate in the program designed to acquaint them with career opportunities in engineering, science and technology. They will be exposed to the real work environment and will be given the opportunity to interact with people working in these fields. They will be able to view the application of the many concepts studied and information received in the classroom. The students will also tour selected NASA facilities.

The program schedule is:

9:30 Students arrive

9:45 Welcome and keynote speaker

10:05 Introduction of Profile Speakers

10:10 Profile of an Engineer

- 10:15 Profile of a Mathematician
- 10:20 Profile of a Scientist
- 10:25 Profile of a Technician
- 10:30 Tour of facilities
- 12:00 1:30 Lunch and Interaction Session, Bldg. 1220



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-7

March 23, 1977

WEEKLY NEWS REPORTS ON LANGLEY ACTIVITIES

Hampton, Va.--Weekly news reports on major NASA and Langley Research Center research and activities that may be of interest to your audiences are now being prepared and taped each Friday. The reports are available by calling a special Public Affairs Office telephone number, (804) 827-3744. Your representatives are invited to tape all or part of the reports, or take notes for possible stories.

The schedule for the month of April is:

April 1: Aircraft Drag Reduction Studies aim at doubling aircraft fuel efficiency

April 8: The Technology Utilization House -Home of the Future

April 15: Solar Heating and Cooling for large buildings

April 22: Updated status report on the Viking Extended Mission

April 29: Space Shuttle 1st manned captive test on May 26 to carry Langley instrumentation

We hope this service will be of value to your station.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-8

APRIL 1, 1977 3 P.M. EST

NASA'S AMES RESEARCH CENTER ASSUMES LEAD ROLE IN HELICOPTER RESEARCH

Hampton, Va.--The National Aeronautics and Space Administration (NASA) today began implementation of its plan to establish Ames Research Center, Moffett Field, CA, as lead Center for helicopter research.

Approved last summer, the plan resulted from a NASA assessment of its overall research activities to identify areas where realignment would increase the effectiveness in research output and reduce costs. This is of particular importance in view of growing competition from foreign industry in the helicopter field.

Consistent with its roles and missions responsibility for short-haul air transportation, Ames was designated the leading NASA Center for helicopter research. Both NASA's Langley Research Center, Hampton, Va., and Lewis Research Center, Cleveland, Ohio, however, will have responsibilities for key segments of the helicopter activities.

Ames will conduct helicopter research on small-scale and large-scale hardware using aeronautical faciliites, including its 40-by-80-foot wind tunnel and flight simulation capabilities, and will conduct

flight tests with research rotorcraft such as the Tilt Rotor Research Aircraft and Rotor Systems Research Aircraft.

Langley will emphasize helicopter structures and continue some disciplinary research in acoustics, airfoils, aeroelasticity, and avionics components.

Lewis will emphasize helicopter propulsion with the first step being a proposed new program in helicopter transmission technology. This program will include helicopter engine technology in a later phase.

A NASA Headquarters Helicopter Program Office will be responsible for formulation of the overall agency helicopter program and integration of the research efforts of Ames, Langley, and Lewis.

Over the next three years these changes will result in 72 positions being added to the Ames staff. During the period of transfer, the Langley activity in helicopters will be phased down but will continue at a level of 72 man-years engaged in continuing helicopter work.

With the expected growth in Langley Long-Haul Aircraft Technology activities, it is anticipated that there will be little long-term impact on Langley manpower and the local economy.

1PR 1/77

NASA News

National Aeronautics and Space Administration

Langley Research Center Hampton, Virginia 23665 AC 804 827-3966



For Release:

RELEASE NO. 77-9

April 1, 1977

EARTHQUAKE EXPERT TO SPEAK

Hampton, Va.--Dr. Charles Thiel will be the guest speaker for the NASA Langley Research Center colloquium series on Monday, April 11. His talk, entitled "Earthquakes", begins at 2:30 p.m. in the Langley Air Force Base Theatre.

Dr. Thiel, presently Director of the National Advanced Environ-mental Research Division of the National Science Foundation, has been responsible for much of this country's research on earthquake phenomena for the past five years. In his position, he had traveled all over the world to view the effects of quakes, to analyze the present techniques for prediction and to evaluate construction practices in quake-prone regions.

Thiel's talk is rich in illustrations, impressively demonstrating the immense power of earthquakes. He will discuss their causes and the probability of occurrence along with the modern methods of forecasting, monitoring and design.

A graduate of Purdue University, Thiel became interested in earthquakes while studying the nonlinear theory of continuous media.

Although there have been recent quakes in China, Alaska, and California, Thiel notes that "one of the largest quakes ever recorded was centered near Richmond, Virginia."



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

April 6, 1977

NOTE TO EDITORS

The Visitor Center at NASA's Langley Research Center will be closed Easter Sunday, April 10. It will reopen on Monday, April 11.

Regular hours of operation are from 8:30 a.m. to 4:00 p.m. Monday through Saturday, and on Sunday from noon to 4:00 p.m.

Maurice Parker Public Affairs Officer

APR 6/7-

MMS/News

National Aeronautics and Space Administration

Langley Research Center Hampton, Virginia 23665 AC 804 827-3966



For Release:

April 6, 1977

RELEASE NO. 77-10

OSCAR NOMINATED FILM OPENS AT NASA-LANGLEY

Hampton, Va.--A NASA film recently nominated for an Oscar is now being shown in the Visitor Center theatre at NASA Langley Research Center.

Titled "Universe," the 28-minute film is one of five documentaries recently nominated for a motion picture Academy Award. The film was produced for NASA by Graphic Films Corporation of Hollywood, California.

The film takes a new look at the solar system, featuring an imaginary trip through space. It is of particular appeal to anyone interested in astronomy.

The Langley Visitor Center is open Monday through Saturday from 8:30 a.m. to 4:00 p.m., and on Sunday from noon to 4:00 p.m. Admission is free and no special clearance is required to enter the Center.

1PR 7/17

NASA News

National Aeronautics and Space Administration

Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-11

April 7, 1977

NASA-LANGLEY TESTS POLLUTION DETECTOR IN NEW YORK HARBOR

Hampton, Va.--A remote monitoring device developed at NASA

Langley Research Center is being tested in the waters of New York's

Upper Bay.

The instrument contains sensors designed to detect and monitor fecal coliforms (colon bacteria) that are often found in waste materials dumped into coastal zone waters.

The demonstration test is being conducted off Caven Point, New Jersey, just south of the Statue of Liberty, for approximately one week beginning April 7. The test is a cooperative project between NASA and the U.S. Environmental Agency (EPA) Region II Surveillance and Analysis Division.

Successful performance of the NASA detection system will lead to a more elaborate NASA-EPA test program this summer at the Ambrose Lighthouse, located in the New York Bight. That program will seek to evaluate the system in deep ocean water.

The instrument, called a remote monitoring platform, contains ten coliform sensors, a radio transmitter, and batteries for power. The platform sits on the bottom of the bay in about 15 feet of water. An umbilical line rises from the platform to a small buoy and antenna that float atop the water.

Fecal coliforms are detected by the sensors and data are radioed to a control center where they are monitored and analyzed to give coliform concentrations. The test control center is located inside a NASA truck on shore, about three miles from the buoy. EPA representatives have a mobile laboratory at the test site to make standard method tests for comparisons with information obtained from the NASA system.

The sensor monitoring technique is based on an electrochemical detection method developed by Dr. Judd Wilkins of Langley. The system is an improvement over standard detection methods because it is automated and provides rapid test data and analysis.

The electrochemical method of coliform detection is based on the fact that coliforms evolve molecular hydrogen through metabolism. There is a linear relationship between initial cell concentration and the time the hydrogen is evolved.

Standard methods of coliform analysis require manual acquisition of samples, and require from 24 to 96 hours for complete testing and analysis. The electrochemical method can be complete in as few as seven hours.

Further development of the Langley system could lead to the deployment of detection instruments in many coastal and inland waterways, providing continuous monitoring of fecal coliform concentrations throughout the United States.

NASA News

National Aeronautics and Space Administration

Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-12

April 21, 1977

NASA CENTER HONORS SECRETARIES

Hampton, Va. -- NASA Langley Research Center will observe National Secretaries Week with a special program on Friday, April 29. The program begins at 1:30 p.m. in the hangar area of Building 1220.

Donald P. Hearth, Langley Director, will be the guest speaker.

Following his talk, there will be a short social period and then,

tours of selected research facilities. Included in the tours will be:

a Viking briefing; the Tech House and solar array; the NASA Hangar;

and two wind tunnels.

Approximately 400 secretaries and their supervisors are expected to attend.

MASANews

National Aeronautics and Space Administration

Langley Research Center Hampton. Virginia 23665 AC 804 827-3966

RELEASE NO. 77-15

For Release:

May 3, 1977

WYLE LABORATORIES AWARDED NASA CONTRACT

Hampton, Va.--The Wyle Laboratories have been awarded a contract to provide electronic instrument support for NASA's Langley Research Center.

The major thrust of this work is concerned with instrument inspection, calibration, maintenance and application to satisfy the measurement requirements of tests conducted in Langley test facilities. This involves some 30,000 instruments and transducers valued at more than \$50 million. Other major support work involves the design, modification, and maintenance of hardware and computer programs associated with digital data systems and special-purpose computer systems used in most research facilities.

The period of performance for this cost-plus-award-fee contract is October 1, 1977 through September 30, 1979, with a one-year priced option and two one-year unpriced options. The five-year effort is valued at approximately \$23 million.

NASA News

National Aeronautics and Space Administration

Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-16

MAY 5, 1977

NASA AWARDS CONTRACT TO DEVELOP DC-10 STABILIZERS

Hampton, Va.--The McDonnell Douglas Corp., Douglas Aircraft Co., Long Beach, Calif., has been awarded a \$15.6 million NASA contract to develop and evaluate advanced composite vertical stabilizers for DC-10 transport aircraft.

Advanced composite materials offer high potential for reducing structural weight and direct operating costs of future commercial transport aircraft.

Composite materials are made up of filaments of boron or graphite arrayed in an epoxy, polyimide or aluminum matrix. Using composite materials rather than metal can decrease aircraft structural weight by about 25 per cent, reducing fuel consumption by 10 to 15 per cent.

Composite materials are not only lighter than metal, but also are stronger.

Under the Aircraft Energy Efficiency (ACEE) Program, NASA is studying composite structures. The program is aimed at accelerating the use of composite structures in new aircraft by developing technology and processes for introduction of such structures into commercial transport aircraft.

Managed by NASA's Langley Research Center, the work required by this contract will be performed over a period of six and one-half years at the Douglas plant in Long Beach.

Costs of the definitive contract will be shared, with NASA contributing approximately \$15.6 million and the contractor contributing approximately \$1.7 million.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-17

May 9, 1977

ARMY MATHEMATICIANS CONFERENCE HELD AT LANGLEY

Hampton, Va.--The 23rd Conference of Army Mathematicians, sponsored by the Army Mathematics Steering Committee, will be hosted by the Langley Directorate, U.S. Army Air Mobility Research and Development Laboratory (USAAMRDL) at NASA Langley Research Center May 11-13. The conference begins at 8:45 a.m. in Building 1212, Room 200.

The conference will consist of five invited addresses by distinguished mathematics professors and thirty-six technical papers contributed by researchers throughout the Army's research installations.

Invited addresses will be given by: Professor Michael Crandall,
Mathematics Research Center; Professor Edward W. Kamen, Georgia Institute
of Technology; Professor Heinz Otto Kreiss, Courant Institute of Mathematical
Sciences, New York University; Professor M.D. Kruskal, Princeton University;
and Professor David H. Stattinger, University of Minnesota.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

Karen Miller

Langley Research Center, Hampton, Va.

(Phone: 804/827-2932)

3 P.M., Wednesday, May 11, 1977

RELEASE NO: 77-17

DOUGLAS AWARDED CONTRACT TO STUDY AIRCRAFT CONTROLS

The Douglas Aircraft Co., Long Beach, Calif., a division of the McDonnell Douglas Corp., has been awarded a \$2.3 million NASA contract to investigate selected advanced aerodynamic and control concepts for future energy-efficient civil transport aircraft.

These concepts hold considerable promise for aircraft of the 1980s and would assist efforts to make future aircraft more energy conservative, quieter, safer and more comfortable.

-more-

Mailed: May 11, 1977 With its Aircraft Energy Efficiency Program, NASA is developing technology to make future air transports up to 50 per cent more fuel efficient. Work under this contract involves development of several aircraft features to improve the aircraft's lift to air-drag ratio, allowing an airplane to use less fuel.

This would be accomplished by incorporating advanced aerodynamic features such as winglets (wing tip vertical fin-like devices) to improve wing efficiency and advanced active control systems that reduce weight and drag by reducing control surface areas.

Douglas will design and wind-tunnel test a high-aspect-ratio supercritical wing. A high-aspect-ratio wing has a long span relative to its width. Properly designed high-aspect-ratio wings increase an airplane's aerodynamic efficiency.

The supercritical wing, invented by Dr. Richard Whitcomb of NASA's Langley Research Center, Hampton, Va., has a flattened upper surface and curved lower surface which, when flying at near-sonic speeds of current transport aircraft, decreases air drag by delaying occurrence of shock waves on wing surfaces. The wing design also will incorporate high-wing surfaces. The wing design also will incorporate high-lift devices.

Work under the cost-type contract is to be performed at the Douglas plant in Long Beach over approximately two years. The contract is managed by NASA's Langley Research Center.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-18

May 10, 1977

NASA VISITOR CENTER CLOSED ONE DAY

Hampton, Va. -- The Visitor Center at NASA's Langley Research

Center will be closed for one day on Saturday, May 14, for minor repairs

and a thorough cleaning. The Visitor Center will reopen Sunday, May 15.

The Langley Tech House will remain open as usual on May 14, and drive-through tours of the NASA research center will be available as usual to all visitors.

Regular Langley Visitor Center hours are 8:30 a.m. to 4 p.m., Monday through Saturday, and noon to 4 p.m. each Sunday.

NASA News

National Aeronautics and Space Administration

Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

NOTE TO EDITORS

We have moved!

If you want us, here's how to get us:

by mail -

Public Affairs Office

Mail Stop 115

NASA Langley Research Center

Hampton, VA 23665

by telephone -

(804) 827-2932

in person -

Headquarters Building 1219

Rooms 222 and 223

NASA Langley Research Center

Maurice Parker

Public Affairs Officer

Karen Miller

Public Information Specialist



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-20

May 20, 1977

SATELLITE INSTRUMENT REVIEW PLANNED AT LANGLEY

Hampton, Va. --NASA's Langley Research Center is responsible for developing a microwave scatterometer ocean-surface wind sensor for the SeaSat-A satellite, scheduled for a 1978 launch. A comprehensive review of all Langley activities related to this effort is planned for June 6 and 7 in Building 1202 at 8:30 a.m.

The SeaSat-A Project is managed by NASA's Jet Propulsion Laboratory. The satellite will carry instruments to measure wave heights, surface winds, directions and temperatures, and to provide radar images of waves and ice fields.

Ocean surface winds are required as inputs to ocean wave forecast models and can also be helpful in weather forecasting. The lack of sufficient wind and pressure data over the oceans has thus far precluded better long-range weather forecasting for continental areas.

Microwave scatterometers have been shown to be sensitive to surface winds in previous aircraft programs sponsored by Langley and in the Skylab S-193 experiment.

The Langley-developed scatterometer is designed to measure wind speed and direction over an area 1,000 kilometers wide. It can measure wind speed from 4 meters per second to over 24 meters per second.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

May 19, 1977

RELEASE NO. 77-21

NASA ENGINEERS STUDY SPIN, STALL PROBLEMS FOR LIGHT PLANES

Hampton, Va. --NASA aeronautical engineers are conducting intensive research on the problems of spins and stalls in light general aviation airplanes. The NASA Research and Technology Advisory Council (RTAC) Panel on General Aviation Technology sees stalls and spins as the most important safety problems facing light plane designers, since they account for 30 per cent of all fatalities in light planes.

In response to requests for expanded, aggressive research on the problem, NASA's Langley Research Center, Hampton, Va., has formulated a program fashioned after highly successful research programs conducted for military designs such as recent fighter airplanes.

Langley has traditionally been a leader in research to solve or minimize stall-spin problems. The research at Langley dates back to the 1930s, when a 15-foot spin tunnel was put into operation. The tunnel was enlarged to 20 feet in 1941, and has been used since to test more than 400

airplane designs. Today it is the only operational spin tunnel in the United States.

Langley's program objectives include determining aerodynamic characteristics of aircraft designs at high angles of attack, concepts for stall avoidance or "stall proofing," developing emergency spin recovery systems and establishing design guidelines for insuring satisfactory spin characteristics. Development of test techniques, such as radio-controlled models which can be used by the general aircraft industry and consultation services for industry are included.

The program will study several low and high wing designs, as well as single and twin engine configurations. Specialized testing techniques developed at Langley in recent years will augment this research. Free flight tests in the full scale wind tunnel, drop model tests and piloted simulator studies will be performed.

In one new project, researchers are attempting to determine the effects of tail design on spin characteristics. A representative low wing, single engine design has been modified to accommodate several tail configurations for both full scale and model airplane tests.

Four separate tail configurations have been designed and fabricated at Langley, based on extensive spin tunnel model tests. Spin characteristics of the airplane with these four tails will be fully tested, along with

changes in loading and mass distribution in wings and fuselage.

Since some of these configurations will have unrecoverable spins (by normal recovery methods), a spin recovery parachute has been designed and built at Langley and is fitted to the airplane. Its first high speed deployment test, conducted in March, was successful.

Following two inflight test deployments and local documentation and checkout flights, spin testing on the first tail configuration will begin at NASA's Wallops Flight Center, Wallops Island, Va., in June.

The test airplane is fully instrumented to record control forces and positions, angles of attack and sideslip, angles of pitch and bank, rates and accelerations about all axes, airspeed, altitude, engine power and other parameters. Some of the more critical parameters will be telemetered for real time observation on the ground.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

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For Release:

RELEASE NO. 77-22

May 20, 1977 3 p.m.

LOCKHEED AWARDED COMPOSITE VERTICAL STABILIZER CONTRACT

Hampton, Va.--The Lockheed-California Company, a division of Lockheed Aircraft, Burbank, California, has been awarded a contract to demonstrate technology for composite vertical stabilizers for the L-1011 aircraft. The contract is one of several being established with commercial transport manufacturers as part of the NASA Aircraft Energy Efficiency Program (ACEE). The ACEE program is aimed at the application of advanced technologies that will increase by up to 50 percent the fuel efficiency of future civil transports.

One of the technologies being developed is the use of composite materials. Composite materials consist of high strength filaments embedded in a polymeric matrix. Aircraft structures made from composites are much lighter than conventional metal aircraft structures. This weight saving will result in lower fuel consumption.

Under this contract, an extension of a development program that began two years ago, Lockheed will develop advanced manufacturing methods suitable for production of composite structures. Also, all analysis and testing required to meet Federal Aviation Administration

requiremeants for the adequacy of aircraft structures will be performed.

Costs of this contract will be shared, with NASA contributing \$15.7 million and the contractor contributing \$1.7 million. Managed by NASA's Langley Research Center, the work required by this contract will be performed over a period of six and one-half years.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-24

June 7, 1977 3 p.m.

ALLARIO AWARDED SLOAN FELLOWSHIP

Hampton Va. -- Dr. Frank Allario, of NASA's Langley
Research Center, was recently selected by the Stanford
University as a Sloan Fellow for the 1977-78 academic year.

Allario was one of two employees nominated by NASA's Office of Professional Development for the Stanford-Albert P. Sloan Fellowship Program. John P. McCarty, of the Marshall Space Flight Center, was also selected.

Conducted by the Stanford Graduate School of Business, the program is designed for young middle-management executives with superior records of achievement. The program offers a master of science degree in management for satisfactory completion of the nine-month course. Sloan participants are sponsored and supported financially by their employing organizations.

Since January, 1977, Allario has served as Group

Leader of the Laser Heterodyne Spectrometer Experiment for

the Spacelab. He performs laboratory research on tunable

semiconductor lasers and their application to atmospheric

pollution monitoring. He was Head, Laser Physics and Applications Section from November 1969 until he was appointed to

his present position.

Allario graduated cum laude from Manhatten College in 1962, earning his bachelor of science degree in physics.

In 1965, he earned his master of science and in 1967, his Ph.D in physics from the Polytechnic Institute of New York.

He is the author or co-author of over 30 technical papers or conference talks.

He and his wife, Marquerite; and their eight year old daughter, Charlotte, live in Village Green in Newport News.

Allario will leave Langley in mid-August to begin his Stanford studies.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-26

June 16, 1977

NASA NAMES TWO CONTRACTORS TO STUDY CARGO AIRCRAFT IMPROVEMENTS

Hampton, Va. --Is there a need for a new aircraft dedicated to cargo transportation before the turn of the century? What factors should be considered in the design approach to the airplane? What kinds of technology are required to realize a significant performance advantage for such an aircraft? What role could an advanced aircraft design play in stimulating the growth of air cargo?

These and other questions are being asked at NASA's Langley Research Center, Hampton, Virginia, as part of a study called the Cargo/Logistics Airlift Systems Study (CLASS). The answers should define some of the critical characteristics of an air cargo system that could meet national and world requirements before the end of this century.

Twin study contracts have been negotiated with the Lockheed-Georgia Company, Marietta, Georgia, and with the Douglas Aircraft Company, Los Angeles, California.

The two firms are being asked to examine the complex air cargo problems with these objectives in mind:

- Study, evaluate and characterize present air cargo operations.
- Survey air cargo operations at several major airports.
- Estimate the nature of present and future air cargo demand, based on predicted shipper response to reduced cost and improved service.
- Identify commodity and distribution system characteristics that will lead to high eligibility for air transport.
- Determine the need for improved efficiency of air cargo operations.
- Identify research and technology requirements to support design concepts for future cargo aircraft.

Working with Lockheed will be Trans World Airlines, New York, and two consulting organizations, the Equipment Interchange Association, Washington, D.C., and D.L. Paden and Associates, Berwyn, Pennsylvania; working with Douglas will be the Flying Tiger Line, Inc., Los Angeles, California, an all-cargo airline. The studies began June 1 and will continue for 11 months.

To be certain that the studies are as realistic as possible, the Langley Center is working closely with several government and industry organizations to exchange information on present and future air cargo requirements and to solicit review of the CLASS study progress. The groups include the Department of Transportation, Federal Aviation Administration, Department of Defense and private companies, such as airframe manufacturers, major air shippers, commercial airlines and freight forwarders.

During the past two decades, air cargo traffic has grown at a much greater rate than surface freight. Despite a recent slowdown, air cargo market forecasts by major airframe manufacturers predict a growth rate ranging from 11 to 14 per cent per year through the next decade. Even with this significant growth, however, commercial activity is not expected to warrant support of development of a new freight aircraft before the year 2000.

Industry forecasts are based on historical trends in air freight traffic and economics. They assume no major reductions in overall shipping costs that might be achieved through improvements in aircraft design, economy of operations, or more efficient coordination between air and ground operations and surface methods.

Therefore, specifications for a future aircraft represent only one requirement for a future cargo distribution network. The CLASS study will investigate whether air cargo growth and higher carrier profits

are possible if an advance air freighter design is carefully tailored to an integrated transportation system.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-27

July 6, 1977

BOEING AWARDED COMPOSITE ELEVATOR CONTRACT

Hampton, Va.--The Boeing Commercial Airplane Company, Seattle, Washington, has been awarded a contract by the National Aeronautics and Space Administration to design, ground test and certificate composite elevators for the Boeing 727 aircraft.

The contract is one of several being established with commercial transport manufacturers to demonstrate the weight savings of composite components as part of the NASA Aircraft Energy Efficiency Program (ACEE). The ACEE program is aimed at the application of advanced aeronautical technologies that will increase by up to 50 percent the fuel efficiency of modern transports.

One of the technologies being developed is the use of composite materials. Composite materials consist of high

strength filaments embedded in a polymeric matrix. Aircraft structures made from composites are much lighter than conventional metal aircraft structures. This weight saving can result in lower fuel consumption.

Boeing will develop advanced manufacturing methods suitable for production of composite structures. Five ship sets of elevators (5 right- and 5 left-hand elevators) will be manufactured during the contract to obtain manufacturing process data. Such data are needed in order for an aircraft builder to make an accurate evaluation of the cost of incorporating new composite structures, such as elevators, into future aircraft.

All analysis and testing required to meet Federal Aviation Administration requirements for the adequacy of aircraft structure will be performed. If all technical and economic factors related to a production change are satisfied, composite elevators could become standard production parts for all subsequent Boeing 727 aircraft.

Costs of this definitive contract will be shared, with the Government contributing \$8,010,000 and the contractor contributing \$890,000.

Managed by NASA's Langley Research Center, the work required by this contract will be performed over a period of about three and one-half years.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

RELEASE NO. 77-28

For Release:

NASA TECH HOUSE TO CLOSE

July 12, 1977

HAMPTON, Va.--The Technology Utilization House at NASA's Langley Research Center will be closed to the public beginning August 1.

The energy-efficient house will be prepared for the arrival in mid-August of a family that will live in the house as part of a one-year research program. The program is designed to better determine the savings that are possible through the use of technological innovations in the house, many of which were developed from NASA's space program technology.

The family selected to live in the house includes a professor from Florida State University; his wife, a registered nurse; and their two children, a teenage girl and a 12-year-old boy.

Displays that depict how the energy-saving systems work will be located near the Tech House to allow Langley visitors to learn about the house while it is closed to the public. The Langley Visitor Center will also feature a model of the Tech House and an audio/slide presentation describing its systems and equipment.

The Tech House was designed and built to demonstrate how the newest technological advances can be applied to an average home.

Materials and equipment in the contemporary-style, three-bedroom house were selected primarily to save vitally important energy and water, and in turn, save money for a homeowner. Preliminary studies reveal that a savings of more than \$20,000 can be realized over a 20-year period.

Typical equipment in the house includes solar collectors on the roof, special insulation, a water recycling system, an automated heating and cooling control system, emergency lighting, a special security system, an improved fireplace, and other advanced equipment.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

RELEASE NO. 77-29

For Release:

NASA WIND TUNNEL SITE DEDICATION

July 13, 1977

HAMPTON, Va.--The site of a unique national wind tunnel facility will be dedicated at NASA's Langley Research Center on Tuesday, July 19. Ceremonies will begin at 11 a.m.

Principal speaker at the dedication will be Dr. John

J. Martin, Assistant Secretary of the Air Force for Research

and Development. Donald P. Hearth, Langley Director, will

introduce Dr. Martin, and Oran W. Nicks, Langley Deputy

Director, will be master of ceremonies.

A long line of aircraft that have benefited from Langley research in the transonic speed range (the range that crosses the sound barrier) will be on display from 10 a.m. to 3 p.m. the day of the ceremony.

The display aircraft include a giant B-747 freighter; a wide-bodied DC-10 passenger plane; three Air Force fighters, F-14, F-15 and F-106; a Learjet business aircraft; Langley's B-737 flying laboratory; a T-38 jet trainer; and a UH-1H helicopter with special rotor tips.

The new wind tunnel, called the National Transonic

Facility (NTF), is being built at Langley because the Center

has the most experienced staff of aeronautical research

specialists in the country, and because of Langley's

60-year history of major accomplishments in transonic

aerodynamics.

When completed in 1980, the tunnel will be used for major transonic research by NASA and the Department of Defense. About half of the NTF's occupancy will be allocated to other government agencies, private industry and the scientific community.

The completed facility is estimated to cost about \$85 million.

The only facility of its kind in the world, the NTF will allow the United States to maintain its leadership in high-performance commercial and military aircraft, plus develop future transport planes that will be much more conservative of fuel than present aircraft.

The new tunnel uses cryogenic gas (extremely cold nitrogen) to allow testing of aircraft models in a realistic simulated flight environment. The nitrogen gas, cooled to temperatures as low as minus 300 degrees F., will produce the simulated Mach numbers and density ratios to allow

accurate simulation of full-scale aircraft characteristics for many classes of future aircraft.

Transonic air flows are especially complex because of the interaction of local flows that accelerate to form shocks and turbulence just below and above Mach 1 (the speed of sound).

The NTF will provide over ten times the Reynolds number (a unit of measurement) capability available in existing transonic tunnels. Because of this, the NTF will greatly augment U.S. transonic capability in a significant way to meet a growing demand for larger, more maneuverable, and more energy-efficient aircraft.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-33

July 28, 1977

FLIGHT TESTS BEGIN AT WALLOPS

Hampton, Va. --A light aircraft from NASA's Langley Research
Center recently began a flight test program in airplane spin recovery
at NASA's Wallops Flight Center on Virginia's Eastern Shore.

Spin characteristics of the airplane will be fully flight tested during the next year or so, using four different tail designs developed and built at Langley.

The spin recovery test project is part of a larger Langley program to improve the safety of general aviation (light) airplanes by studying the problems of spins and stalls. About 30 per cent of all fatalities in light planes are caused by accidents that involve spins and stalls.

The Langley test airplane is a representative low-wing, single-engine general aviation design modified to accommodate several tail configurations that should improve the spin characteristics of light aircraft.

The airplane is fully instrumented to provide researchers with detailed information on each flight. The most critical data will be telemetered to researchers on the ground for real-time observations.

Because some of the tail configurations will have unrecoverable spin characteristics, by normal standards, the airplane is fitted with a spin recovery parachute designed and constructed at Langley.

Two additional single-engine airplanes will go to Wallops during the next several months for studies in the characteristics of high-wing light airplanes.

In addition to actual flight testing, the Langley spin/stall research program encompasses studies of concepts for stall avoidance, development of emergency spin recovery systems, and establishment of design guidelines to insure satisfactory spin characteristics.

Other aspects of the program include free-flight testing in Langley's full-scale wind tunnel, tests with radio-controlled models dropped from aircraft, and piloted simulator studies.



Langley Research Center Hampton. Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-39

August 23, 1977

AIRCRAFT STABILIZER CONTRACT AWARDED TO BOEING

Hampton, Va. -- The Boeing Commercial Airplane Company, a division of the Boeing Company, Seattle, Washington, has been awarded a contract to demonstrate technology for advanced composite horizontal stabilizers for the B-737 transport aircraft.

Costs of this definitive contract will be shared, with NASA contributing about \$11.7 million and Boeing contributing about \$1.3 million. Managed by NASA's Langley Research Center, Hampton, Virginia, the work required by this contract will be performed over a period of four years.

This contract is one of several being established with commercial transport manufacturers as part of the NASA Aircraft Energy Efficiency Program (ACEE). The ACEE program is aimed at the application of advanced technologies that will increase the fuel efficiency of future civil transports by up to 50 per cent.

One of the technologies being developed is the use of composite materials. Composite materials consist of high strength filaments embedded in a polymeric matrix. Aircraft structures made from composites are much lighter than conventional metal aircraft structures and the weight saving results in lower fuel consumption.

Under this contract, Boeing will develop advanced manufacturing methods suitable for production of composite structures. Also, all analysis and testing required to meet Federal Aviation Administration requirements for the adequacy of aircraft structures will be performed.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-41

September 15, 1977

ENERGY EXHIBIT OPENING SOON

Hampton, Va. --ENERGY, a free exhibit at the Visitor Center at NASA's Langley Research Center, will be open to the public September 22 through 29.

ENERGY is a major educational exhibit of the Energy Research and Development Administration and is for those who want a better understanding of our energy situation and what can be done about it.

The exhibit is housed in two fifty-foot trailers filled with animated exhibits, films and visitor-operated consoles. Two science teachers from the American Museum of Atomic Energy in Oak Ridge, Tennessee, will be available to answer questions.

All types of energy currently in use, as well as possible future energy sources, are covered by the exhibit. By seeing ENERGY, visitors can gain an overall picture of the nation's energy problems and their effect on America's standard of living.

For example, present natural gas supplies are expected to be depleted within 15 to 40 years, and several exhibits explain how additional natural gas can be obtained from the nation's huge coal reserves.

Petroleum, the mainstay of America's transportation and a major fuel for generating electric power, is expected to be exhausted in about 50 years. But, as one exhibit explains, petroleum may be obtained from the processing of oil shale.

Through other exhibits, visitors may observe the process of developing power through magnetohydrodynamics, a sort of "supercharger" for conventional power generators. They can also see solar heat collection and geothermal electric power generation exhibits.

Several other exhibits demonstrate the principles of uranium fission nuclear reactors, breeder reactors, and hydrogen fusion reactors.

ENERGY includes many question and answer consoles where visitors can measure their "Energy Quotients."

The exhibit is operated for ERDA by Oak Ridge Associated Universities, a nonprofit educational and research organization of 45 colleges and universities in the southeast.

N/S/News

National Aeronautics and Space Administration

Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-44

September 29, 1977

CLERICAL TRAINEES GRADUATE

HAMPTON, Va. --Fifteen clerical trainees will graduate from training programs at NASA's Langley Research Center Friday,

September 30.

Hampton City Councilwoman Martha M. Ailor will deliver an address to the graduates. Ms. Econyes L. Harvey was selected by the trainees to speak in their behalf.

Graduation certificates will be presented by Hampton City
Manager O. Wendell White. He will be assisted by John J. Cox
of Langley's Personnel Division.

Nine of the graduates have completed a one-year training program sponsored by NASA and the Peninsula Office of Manpower Programs under the Comprehensive Employment Training Act (CETA).

Six other graduates, now Langley employees, will receive certificates for completion of one year of advanced training in the Worker Trainee Opportunity Program.

NASA/CETA graduates are Althea A. Brown, Malinda P. Eley, Diana L. Harmonson, Econyes L. Harvey, Linda M. Highsmith, Pamela M. Raynor, Vivian W. Holmes, Vivien W. Lewis, and Cheryl N. Vickers.

Advanced training certificates will go to Priscilla A. Carter,
Denise C. Fentress, Shelia P. Jones, Roberta Knight, Debra L.
Livingston, and Beverly A. Taylor.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

October 6, 1977

NOTE TO EDITORS - DIRECTIONS TO PROJECT RECOUP SITE

Hampton, Va. --Getting to the site of Project RECOUP will be half the fun of reporting the dedication event.

Although the plant will be located on Wythe Creek Road, there is now no entrance to the site from that road. The only way to reach the site is through the Langley Research Center.

Enter NASA-Langley through the main gate off Armistead

Avenue. Special signs will point the way to the dedication site.

Drive through Langley as if going to the Visitor Center. Turn left at the next intersection onto Bush Road. This road goes past the Crash Test Facility and continues as a gravel extension. Security police will help with parking.

If rain threatens on Tuesday morning, the ceremony will be moved to the auditorium of the Langley Visitor Center.

Maurice Parker

Public Affairs Officer



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-46

October 6, 1977

TRIBLE TO SPEAK AT PROJECT RECOUP SITE DEDICATION

HAMPTON, Va. --U.S. Representative Paul S. Trible will be the principal speaker October II at site dedication ceremonies for Project RECOUP, a refuse-fired steam generating plant that will be built at NASA's Langley Research Center.

The ceremony will begin at ll a.m. at the site, located on Wythe Creek Road, but accessible through the NASA Center.

Other speakers at the dedication will be Hampton Mayor Ann
Kilgore; NASA Langley Director Donald P. Hearth; and Colonel John T.
Chain, Commander, 1st Tactical Fighter Wing, Langley Air Force Base.

Project RECOUP (Refuse Consuming Utility Plant) is the first jointly funded federal and municipal project of its kind. The City of Hampton, NASA and the U.S. Air Force will share the \$8.4 million construction cost.

Construction is expected to begin in early 1978, and the plant is scheduled for completion in early 1980.

The plant will burn more than 80 per cent of the refuse from Hampton, NASA-Langley, Langley AF Base, the Army's Fort Monroe, and the Veterans Administration Hospital.

Operating 24 hours a day, seven days a week, the plant will burn 200 tons of refuse a day, doubling the capacity of Hampton's landfill.

NASA-Langley will use the steam generated by the plant to augment its present steam system. This will reduce oil consumption by about 2.4 million gallons a year.

The Reverend Michael A. Battle, Chaplain of Hampton Institute, will give an invocation. Special music will be provided by the Tactical Air Command Band, under the direction of Major Ronald W. Carl.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-48

October 13, 1977

BOEING COMPANY AWARDED CONTRACT

Hampton, Va. -- The Boeing Commercial Aircraft Company,
Seattle, Washington, has been awarded a contract by the National
Aeronautics and Space Administration for the development of
selected advanced aerodynamic and active control concepts for
future civil transport aircraft.

The contract includes six tasks having potential commercial transport application. One task includes design, analysis, and studies of a natural laminar flow wing and investigation of surface coating materials to improve aerodynamic smoothness and reduce air drag.

An Integrated Energy Management task will synthesize an automatic engine thrust management system which uses real-time, sensed aircraft flight information rather than "handbook values" to improve fuel utilization. Another task will determine the performance benefits of different high-lift system designs.

Tasks are included to study the reliability and maintenance costs of primary flight control systems and to assess the benefits and costs of incorporating an augmentation and stability function into the design of a derivative aircraft. Boeing will initiate a program leading to an assessment (in a commercial environment) of the benefits and costs of full integration of active controls technology into the initial design process of specific airplane configurations and missions.

The value of this contract is approximately \$1.5 million. It will be managed by NASA's Langley Research Center, Hampton, Va.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-54

November 8, 1977

CORTRIGHT TO SPEAK ON SOLAR ENERGY

Hampton, Va. --Dr. Edgar M. Cortright, Vice-PresidentTechnical Director, Owens-Illinois, Inc. and former Director of
NASA's Langley Research Center, will be the speaker for the
Langley Colloquium on Monday, November 14, 1977. Dr. Cortright's
lecture is entitled "Recent Developments in Solar Energy."

The colloquium will be held in the Langley Air Force Base
Theatre from 2:30 to 3:30 p.m. Bus transportation will be
available from Buildings 643, 1209, 1219, 1268, and 1244. The
buses will begin loading at 2 p.m. and will depart at 2:05 p.m.

At Owens-Illinois, Dr. Cortright is responsible for providing overall technical direction to the research, development, and engineering programs of this large, multinational corporation.

In recent years, the use of solar energy has been widely discussed.

For solar energy to find wide application it must become economically competitive with other available sources of energy, not withstanding its inherent advantages of being inexhaustible and non-polluting. It is in the areas of space heating and air conditioning, and domestic and industrial process water that solar energy will find its first economic applications - and within a few years. Dr. Cortright will discuss some of the technical, economic, and legislative aspects of this newly developing industry.

Dr. Cortright served as Director of the Langley Research Center from 1968 to 1975. Prior to coming to Langley, Dr. Cortright served in the following NASA Headquarters positions: Chief, Advanced Technology Programs (1958-60), Assistant Director, Lunar and Planetary Programs (1960-61), Deputy Associate Administrator, Office of Space Sciences and Applications (1961-67), and Deputy Associate Administrator, Office of Manned Space Flight (1967-68).

Dr. Cortright is the recipient of the following awards: The

Arthur S. Fleming Award (1963), the NASA Medal for Outstanding

Leadership (1966), the NASA Medal for Distinguished Service (1967),

the AAS Space Flight Award (1970), and the NASA Langley Special

Achievement Award (1977). Dr. Cortright is a member of the National

Academy of Engineering and is a Fellow and a former president of the

American Institute of Aeronautics and Astronautics. Dr. Cortright

edited Exploring Space With a Camera and Apollo Expeditions to the Moon.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-55

November 23, 1977

NASA ADMINISTRATOR TO SPEAK AT LANGLEY AWARDS CEREMONY

Hampton, Va.--Dr. Robert Frosch, NASA Administrator, will be the guest speaker for the Annual Eonor Awards Ceremony at NASA's Langley Research Center. The ceremony will be held on Tuesday, November 29, at 1:30 p.m. in Building 1244 (Hangar).

Frosch will present NASA awards for Outstanding Leadership,

Exceptional Service, Group Achievement and 45 Years' Federal Service.

Langley Director Donald Hearth will present four awards for 40 Years' Federal Service and 83 awards for 35 Years' Federal Service. Special Achievement Awards and the Equal Employment Opportunity Award will also be presented. Four employees will receive Outstanding Volunteer Service Awards and three employees will share Langley's highest honor, the H.J.E. Reid Award. The Technology Utilization Award will be presented for the first time.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-56

November 30, 1977

KLATE HOLT COMPANY SELECTED FOR CONTRACT NEGOTIATION

Hampton, Va. -- The Klate Holt Company, Hampton, Va., has been selected for negotiation leading to award of a contract to provide facility and equipment maintenance support services to NASA's Langley Research Center.

This contract covers a period of three years, beginning March 25, 1978. Klate Holt estimates the value of this contract to be approximately \$13 million. In addition, there are two one-year unpriced option periods. These unpriced options will be negotiated during the third year of the contract.

Some of the areas to be serviced and maintained under this contract are: refrigeration and air conditioning systems, electrical systems, and equipment such as compressors, large valves and pumps. Rigging services and building trades services, such as general carpentry, painting,

masonry work, roofing and street repairs, will be provided. Engineering services, including production of formal reports, drawings and specifications, will also be provided.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-58

December 14, 1977

WILKINSON TO SPEAK AT LANGLEY COLLOQUIUM

Hampton, Va. --Dr. J. H. Wilkinson will be the guest speaker for the December 19 colloquium at NASA's Langley Research Center.

Wilkinson, of the Division of Numerical Analysis and Computing,

National Physical Laboratory, Middlesex, England, will speak on

"A Personal View of the Early Years of the Computer Revolution."

The colloquium will be held in the Langley Air Force Base Theatre from 9:30 to 10:30 a.m.

Wilkinson is renowned for his ground-breaking work in floating point error analysis, development of backward error analysis and error analysis of the eigenvalue problem. He is the author of the widely used fundamental text books, The Algebraic Eigenvalue Problem and Rounding Errors in Algebraic Processes. He has been honored as the ACM 1970

Turing Award Lecturer and the SIAM 1970 von Neumann Award Lecturer.

Wilkinson's lecture will cover his life at the National Physical

Laboratory in early days of the development of electronic computers

and his laboratory's relationships with the competing groups at

Manchester and Cambridge in England and with groups in the USA.

He will describe the excitement of using one of the first working

computers and the early trends in the development of numerical

analysis on an automatic digital computer.



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-59

December 15, 1977

YOST TO SPEAK TO ALAA MEMBERS

Hampton, Va. --Ed Yost, who made the longest manned balloon flight in history, will be the guest speaker for the December 20 meeting of the Hampton Roads Section, AIAA. The meeting will be held in the NASA Langley Research Center cafeteria, Building 1213, with a social at 4:15 p.m. and the program at 4:45 p.m.

Yost will describe the most successful failure in the history of long distance ballooning with his attempt to cross the Atlantic Ocean. After four and a half days and over 2,500 miles, he had to ditch just short of the coast of Portugal. In the process, he broke eight world records, some of which have stood for over 60 years.

A professional balloonist, Yost operates his own balloon-making company in Sioux Falls, South Dakota. He is a veteran test pilot and holds more than 20 balloon-related patents. He built and flew the balloons used in the films, "The Great Bank Robbery" and "The Great Race."



Langley Research Center Hampton, Virginia 23665 AC 804 827-3966

For Release:

RELEASE NO. 77-60

December 23, 1977

MERCURY FIRM SELECTED FOR CONTRACT NEGOTIATION

Hampton, Va. -- The Mercury firm, Tustin, California, has been selected for negotiation leading to the award of a contract to provide support services for steam and compressed air facilities at NASA's Langley Research Center.

This contract covers a period of three years, beginning January 1, 1978. Mercury estimates the value of this contract to be approximately \$2.4 million. In addition, there are two one-year unpriced option periods. These unpriced options will be negotiated during the third year of the contract.